

ITEMS OF INTEREST.

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Thoughts from the Profession.

EXAMINING BOARDS.

In the New York Society.

Dr. Peirce says he is on record as being thoroughly in favor of examining boards. As a teacher of thirty years' standing, he could say that no one accepted with greater satisfaction than he the action of examining boards. From his earliest connection with schools as a teacher, he realized the great effort it required to withstand the temptation to grant degrees which had not been fully earned. It is one of the most difficult positions to fill without bias. The only complete remedy is that the degree shall not be conferred by the teacher, but by a board entirely independent of the source from which the education was obtained. The duty of the board is the protection of the public. The duty of the teacher is to guard well the efficiency of the school. Both are creatures of the State, but to the board especially should the Commonwealth look for protection from empiricism, and the value of the degree bearing the seal of the State. For this reason he is in favor of examining boards whose function shall be to designate those who shall practice dentistry.

There had been many suggestions made to him during the last year as to the position he should take, to harmonize the feeling existing between the schools and the examining boards. The dean of the Baltimore college takes the position that whenever a diploma has the indorsement of the examining board in the State, that diploma should be good throughout the United States. Now, the only way that can be brought about would be for the examining boards of each State to form a National board, and for this

National board to indorse the diploma; then it would be good throughout the United States.

It has been claimed that equity requires every faculty to examine a student at any period of study, and, if qualified, to let him go forth as a practitioner. That is not the province of the faculty, but of the examining board. The student presents himself, and the board can say if he is or is not qualified; and if he is, he can practice. The faculty cannot do that, they are assailed by too many temptations to be allowed that privilege; it is a power that should be awarded only to an examining board.

He felt that he should be cautious in speech, for being closely allied with one school, whatever he said might be considered as showing some antipathy to some rival school; but he stood there simply as a teacher, and as such was decidedly in favor of the degrees being granted independently of the teachers, and thought that till we can arrive at that state we shall not be free from an undesirable class of practitioners.

Dr. Barrett: This subject has come to be a momentous one; it influences the whole question of the proper education of those who are to become members of the dental profession. In all educational departments there have been objections to faculties graduating their students. The difficulty is attributable to the fact that the faculty which is the educating body has a pecuniary as well as professional interest in the graduates, and in graduating the largest number of students. He had held for some time that no teaching faculty should be allowed to confer its own diploma. It is urged that they know best what are the qualifications of those who come up as candidates for graduation; but if an examining board is not competent to discover the qualifications of candidates, the appointment of such a board is a farce. New York has passed a law, which has become active, to the effect that the right to grant medical diplomas shall be vested in a board independent of the teaching faculties, and appointed by the State authorities; in other words, that the sole business of the college is to teach the student, and if a student is refused graduation by the examining board, it is an indication that he has not passed through the proper curriculum, or that the members of the faculty are incompetent and unqualified for their positions.

The board must be made up of men competent for the work, who have passed through a curriculum of study that has made them familiar with the examinations of medical students. They are independent of everything, and simply grant a diploma to those who are competent.

It seems utterly unjust to grant a diploma on a mere examination. The specious plea that knowledge should be recognized wherever and however obtained, has been the cloak under which fraudulent diplomas have in all cases been issued. The business of the teacher is to teach, and not to distribute honors. It should be demanded that the student should have passed a proper course of study and spent a sufficient period of time to obtain proper knowledge before he comes before such a board.

The boards in the different States are working at cross-purposes instead of laboring together on a hard line; the board in one State disqualifying those who have passed an examination before the board of another State. When each State shall have a competent body to examine candidates for practice as well as for graduation, that board alone should have the power to grant diplomas. If the boards in the different States confer degrees under the same general law, it will be possible to have uniformity in examinations by the different boards, who are entirely independent of the schools, and there will be respect by one board for the opinion of another.

Dr. E. T. Darby said he would be very glad to see a National board of examiners, whose duty it would be to examine the graduates of all the dental colleges, but it seems impracticable. No board could be found to undertake such a task. There are strong arguments against allowing a faculty to graduate its own students. He would gladly relegate that duty to a board of examiners, but how is such a board to be appointed? Who are competent to undertake such a task? When the State Board in Pennsylvania was created, one of the provisions was that no one connected with a dental school should be a member of the board. At the time he was not connected with any dental college, but the year after he was elected to a professorship in one of the schools. Then the argument was that a professor in a dental school was the very man to examine, because he was accustomed to teach. He was retained on the board, and as vacancies occurred they were filled by the appointment of other college professors, because they were thought to be best qualified.

There was a feeling afterward that the colleges should not represent more than half the board, so the board was composed of three from the dental colleges and three from the profession at large. He had witnessed the examination of a student at one time by a gentleman who could not answer the questions himself—questions from a quiz book. It is an easy thing, it is said, for a man who knows a thing, to tell it; but it is not easy for all men to tell it

in the same way. A student comes before an examiner and gives the method which he has been taught. He is asked how to fill a root-canal, and answers, "I fill it with chloride of zinc, or gutta-percha." The examiner says he ought to fill it with iodoform or putty, and he "plucks" him because he did not know how to fill a root-canal.

He would gladly see created a board of examiners for the purpose of examining all students graduated from Maine to California, but how is such a board to be appointed?

Dr. Frank Abbott said that his mind had been very much disturbed over this question for many years. He had been teaching and examining men for over twenty-five years. Almost every day of his life he came in contact with students, and from the fact that it obliged him to examine them, he was almost sorry he was a teacher. He wished he might never have to examine another. Teaching is pleasant, as Dr. Shepard has said, but the examination is anything but pleasant; it is very disagreeable when one is obliged to say to a man, "My dear sir, what have you been doing the last two or three years to know so little as you do?" That same expression is frequently made to men who come up before faculties in dental schools.

He had taken quite a strong position against boards created by State laws for the examination of those who come into the State to practice, but he had recently changed his mind. State boards certainly have one merit, and that is, of sifting out the incompetent. If the question should come up in the State of New York to-day as to whether a board should examine all dentists desiring to practice in this State from the college with which he was connected, or from any other source, he thought he should vote for it.

He had noticed the statement with regard to one of the men that was rejected—that the ground was entirely gone over in twenty-five minutes.

Dr. Shepard (interrupting): That was in one chair only.

Dr. Abbott (resuming): Even so, twenty-five minutes is a very short time in which to find out what a man knows. Ten minutes might satisfy you that he knows; but to take twenty-five minutes only, and claim the ground was all gone over, in any one chair, in the practice of dentistry, seemed to him a rather short time. He could not do it, and he did not believe many other men could. It is difficult for one who is not teaching, and has no knowledge of what is taught in the schools, to question an applicant in accordance with what he has been taught.

He did not mean that one kind of anatomy is taught in one

school and a different kind in another, or that different kinds of pathology are taught in different schools; but different methods of treatment are taught in the various schools, and the examiner should give a man a chance to make his own statement. As an instance, it is pretty well known that in his practice he differed very much from others. He uses rubber-dam probably only once in a thousand times, yet there are a great many men who say that a contour filling cannot be properly inserted without a rubber-dam, though some of the best fillings he had ever seen were put in before rubber-dam was thought of. His practice would probably be condemned by most examining boards, because most of them are composed of men who have gone into practice within the past twenty-five years.

The idea of a National board of examiners, he thought, could hardly be realized; but something ought to be done by which boards of examiners and the National association of faculties should work together in harmony. He thought a wrong thing was done, last summer, in naming the schools the graduates of which had been rejected. It created a feeling that will make trouble if it is persisted in.

It is a fact, well known to many teachers, that some students have ways of getting through their examinations that are mysterious. Some fifteen years ago, there was a student in the New York college who was very ignorant and of low grade among his classmates. When his written answers came in they were wonderfully good. The faculty did not understand it, till, some six months afterward, it leaked out that he had a friend, a graduate of the school some years before, who was a very bright fellow. The friend was outside the door, and the student sat near the door and passed the question under the door to him, which was answered and passed back, and the applicant put it in as his answer. That was done without the knowledge of a single man connected with the college. He did not suppose any college faculty is infallible, but all are liable to let men through who are not perfectly qualified. He thought the time had come when there should be a board outside of those who teach which should determine the qualifications of applicants.

Dr. S. H. Guilford: Ever since dentistry amounted to anything in this country the demand has been for advancement. In response to this demand colleges were organized. They filled their place in the beginning; were as good as the people then knew how to make them. After a while the demand for further advancement caused changes to be made. In the early days, men were graduated after an attendance on a course for five months each year for two years;

and degrees were conferred on men of well-known ability who had not attended lectures at all, for the reason that those men, whatever their qualifications may have been when they entered the profession, had made their mark in the world themselves and had proved worthy to practice. After a while the profession said to the colleges: "This thing ought not to be; you have granted degrees to as many men as deserve it." The colleges abolished it. After that it was said that, though men should not be graduated who had not attended lectures, there should be a distinction made in favor of men who had practiced a long while and acquired a part of their education outside of the colleges; and, therefore, many of the colleges agreed to accept a man who had been practicing for five years, and make that five years equivalent to one course of lectures. That continued for a while, and then the demands of the profession went further, and that plan was abolished. The colleges did as was recommended, and decreed that all students must study two full courses—in some cases a spring and fall course being obligatory, and in some conditional. Finally, the demand came to be made in stronger terms, by virtue of the authority of the American Association of Faculties, that all colleges represented in that association should require a course of three full years. He thought this history showed that the men who have been engaged in dental teaching have responded in good faith to the demands of the profession. The number of those desiring to attend college is on the increase. Last year we had in Philadelphia nearly eight hundred students in the dental colleges alone. It has been urged that we should have fewer colleges. But how is this to be accomplished? It is an easy thing to procure a charter for a dental college. If a number of reputable men ask for the privilege, it is granted. The profession has demanded a restriction in the number of colleges, but the number of educational institutions cannot be restricted by legal enactment. What course, then, shall we pursue, so there shall be fewer students and fewer graduates? He thought it could only be by taking steps to shut out some of the colleges.

The medical profession have been following the same line of thought that we have, and it has culminated in the passage of laws regulating the practice of medicine.

He had not yet arrived at the belief that a State board of examiners is absolutely necessary to examine dental students, and thought that the time will come when a dental diploma shall mean everything it should mean. He thought that in all cases of theoretical examination by State boards the questions should be submitted in writing, and the questions and answers filed; then, when

a college is suspected of graduating candidates unqualified to practice, the examination papers before the board would show whether the applicant was qualified. In no other profession is a test of competency required after the diploma is granted. When a young man has studied law a definite length of time, and applies for examination, a board of examiners decides as to his competency, and he is admitted to the bar. His certificate allows him to practice at once. The same rule is followed in the ministerial profession.

If it is necessary to have a State examining board, how shall it be constituted? How shall the examinations be carried on? Under the bill now before the Legislature of Pennsylvania, a student coming up for examination draws a numbered slip and registers that number. It is presented to the board. His name and residence, and the institution from which he came, are unknown. The questions and answers are in writing, and are open to public inspection for from three to six months afterward, so if there is any doubt as to his being competent the record can be appealed to. All are treated alike; no distinction is made; no recognition of previous practice or reference to any school. The examining board renders its report, and says whether the applicant has passed or failed, and only after that does it become known who the candidate was. If we are to have dental laws, he thought they should be framed on that plan. As it is to-day, a student is graduated, and stands well, according to his professor. He comes before the board and is examined orally, and as he answers, the board marks him as it thinks best. Perhaps he is rejected, and the news comes back to the college. The faculty say, "It is very strange; the man passed his examinations." But there is no record kept, and nothing to refer to. Would it not be better to have the examination in writing, so that others might judge as to the fitness of the questions and answers?

We are in a transition period. We believe all want to let as many good men into the profession as possible, and just as few who are incompetent; but in the future the barriers would be placed at the entrance of the colleges.

In regard to a uniformity of State laws: One State has a law and an examining board; another State has no law. How can we get uniformity of State laws? Only by having a National examining board, says one. But every State has the inherent right to frame its own laws. The United States will not pass an enactment requiring the same law in all the States.

Dr. Shepard: In Massachusetts a graduate from the ordinary law school has no rights till he has been examined before the courts, and often graduates of those schools are not admitted. In New

York it was formerly the case that a graduate of the Columbia Law School was admitted to practice on his diploma, but it is not so now. The graduate of that school has to pass the same examination as though he graduated from any other institute. In regard to ministers, everybody knows they are examined by a counsel or presbytery, but a man has to be ordained to the sacred office. He cannot be ordained till he has proven himself worthy before a jurisdictional body. Often, after examination, he is refused ordination, and he cannot administer the sacraments of the church till he has been ordained.

In Massachusetts a graduate of a school of pharmacy cannot be allowed to put up a prescription till he is examined. In Chicago a man who owns a steam-engine, if only of two-horse power, cannot have it run except by a licensed engineer, who has been examined by the State board and authorized to run an engine.

There are one hundred and forty-nine medical colleges in the United States, and the literature of the medical profession is teeming with the fact that those schools are so numerous as to degrade medical education. The report from the State of Illinois goes over that ground and shows it up most thoroughly.

The past four years have witnessed a marvelous change, and the next four will witness a still greater change, and we shall finally have in the examining boards competent, skilful, and practical examiners, who will have the confidence of all because of their fidelity to duty and to the profession.

—Cosmos.

DENTITION IN CATS.—It has been a question with me whether it is an established fact that cats lose their cuspids in their infancy, writes a correspondent of *Popular Science News*. Four kittens, raised in the house during the space of four or five years, lost these teeth at the age of three to four months, the second tooth often appearing next to the first, which finally dropped out. Sometimes the cat had lost one of them for some time before the appearance of the second tooth. Two of our finest cats, now six years old, have lost from one to three. These teeth were of the second set, and this makes me presume that cats may suffer from toothache. Some old cats still have all their teeth. In regard to the second dentition, I have asked friends if they had noticed the loss of the first teeth, and they had only missed the cuspids. Is this mentioned in natural histories? I am curious to know; also, whether dogs have a second dentition?

GRADUATION AND OTHER ITEMS.

Why is it a dentist of years' practice is required to go through the same course as a "beardless" boy, fresh from the school-room, shop, and plow? If there were different ways for an old practitioner to get his diploma, I think a large number of our graduates would attend. I have been in practice fifteen years, and would like to be able to attend a short college course and graduate, but I am debarred.

I don't believe any dental college can *make* a dentist; if it is not born in him it never will work out, for if every one who graduated from a dental college stuck to the business, we should be flooded with those chaps like one who wrote me from a college in Philadelphia, a few years ago, who, hearing that I wished to dispose of my business for a season, was sure he could run it all right because it was way up in Vermont, though this was his first year in college. It seems to be great I and little you with the majority of them, especially during their first year or two. Actual practice will take a little of that out of them.

Flask Presses, used within the vulcanizer, are good, and will remedy great evils. The bottom should be made solid with the sides. It can be done by making the spring wider at the ends and having two holes drilled and riveted to bottom flange. This will do away with the swaying to one side when trying to screw down press onto flasks; this causes the most trouble I have with the press. The press lately made with the spring in the screw-end instead of in the sides could be cast one piece—bottom, sides, and top.

I will tell you of a little thing I have made use of lately that I like. I take the forms for air chambers in artificial plates and solder two tacks on the under side, then they are all ready to use, simply by pressing them into place. I should think the dental manufacturers could make something that would be better than the tack.

I have another thing I like first class. I sent twenty-five cents to Whitall, Tatum & Co., P. O. Box 1866, New York, for three No. 4 horn spatulas, and use them to mix my plaster with; they are better than anything I ever used before, and last a long time. With my horn spatula and rubber bowl I am fixed.

J. A. Robinson, Morrisville, Vt.

An electric device for exploring the mouth, and even penetrating by its light the substance of the teeth, is becoming common.

THE POWER OF THOUGHT.

Those who have seen a small tug-boat, with a large vessel in tow, or a locomotive drawing a heavy freight train up a steep grade, have often remarked, "What power there is in steam."

When listening to one called a "silver-tongued orator," whose eloquence fascinates, and whose argument is convincing, we instinctively say, "What a powerful speaker."

So, while perusing a popular magazine we read an article in which is used such convincing evidence, in terse language, we say, "That writer is a power in the world."

The many and mighty mechanical forces utilized, and the power of literary and oratorical effusions which often create and overthrow governments, shows the power of thought.

The steam-engine, printing-press and electricity, are some of the ripe fruit gathered from the hardy tree of thought.

It seems incredible that there is power enough in thought to kill a person. Yet this is related of a criminal in France, who was to be executed by bleeding. After some formality he was blindfolded, then a surgeon pricked his arm several times, but not sufficient to bring blood.

While an assistant caused a stream of warm water to trickle down the arm, another surgeon timed the pulse, occasionally remarking, "He is growing weaker," then in a decisive voice, said, "He can't live more than twenty minutes," and, strange as it may seem, by the expiration of that time, the man was dead. Though he had not lost a drop of blood, the power of the thought that all his blood was flowing from him caused his death.

In literature, thought has performed many marvelous things. The liberation of the Southern slaves was caused largely by that world-renowned book, "Uncle Tom's Cabin."

In religion, the power of thought was beautifully illustrated when Martin Luther broke and threw off the galling chains of Roman Catholicism, which bound him to a creed he could no longer tolerate.

Many noble minds have burst asunder the iron bands of a dogmatic creed, whose articles of faith were as unlike the ideas of God as a society belle is unlike a noble man.

When a great mind has thought out and introduced something of a higher grade than prevailing ideas, he is often called a crank. Thank God we have such cranks; they turn the wheels of progress.

R. B. Record, D.D.S.

COPPER AMALGAM.

I am satisfied a better and more lasting filling can be made with this than with any other amalgam. I believe failure lies in the way in which the operator prepares it for the cavity. Let me give you my method. If I wish a quick-setting copper amalgam, I simply heat it enough to bring the mercury to the surface in very small beads, then I cut it up in a mortar, and compress it into a lump in my hand. *I never squeeze out the mercury through a chamois.* Fillings treated in this manner *never turn black*, but keep about the color of sterling amalgam, or perhaps a little darker, but never *black*. If you overheat it till the mercury volatilizes, and then squeeze through chamois, it makes a slow setting filling, which takes either a black or a copper color after it has set. The reason of this is the mercury has been nearly all squeezed out, and you have but little more than copper left; hence the chemical combination is not what is desired. I believe the mercury found in the little pellets we buy is essential to its proper reformation in the mouth, and when any of it is lost, we interfere with the proper chemical action of our material just in proportion to the mercury lost. In cases where I have overheated a pellet, I add another to it, which has been heated just enough to permit breaking up. This will take up the surplus mercury of the other pellet, and form into about the desired consistency. Sometimes, if I have overheated a pellet, I set it aside to harden, and try another.

I have obtained the most satisfactory results with copper amalgam, and I am quite confident it has virtues found in no other filling material. I believe it has something of a therapeutical action, though of its *modus operandi* I can say nothing. Badly broken down teeth last better under this material than under any other. I filled two very badly broken down molars in the same mouth, by way of experiment, one with copper, the other with common amalgam. On examining them three months later, I found the copper was still perfect, while the other showed a dark outline, signifying recurrence of caries. I removed this amalgam and found the tooth lined with considerable decayed substance, and after carefully preparing, filled it with copper. In three months time I saw the case again. Both fillings were perfect and the color was that of its original appearance when on the table.

There are those who claim that unless the filling turns black it has proven a failure. Fillings which do not turn black preserve the teeth quite as long as those which do. Copper amalgam does.

not change its shape when properly manipulated. It has a strong edge force, and does not crumble like other amalgams. Where we do not remove all of the decay, if the cavity is allowed to become wet while refilling with copper amalgam, there is no danger of further decay, while with other materials there is.

With proper care copper amalgam can be made quite as durable as gold, if not more so. Pure copper amalgam gives the best satisfaction. *Malcolm W. Sparrow, L.D.S., Toronto, Canada.*

INTIMATE DIAGNOSIS OF DISEASED TEETH.

Read before the Ohio State Dental Society ; reported in *Dental Register*.

Perhaps in no single respect is the difference between the theory and the practice of medical science so strikingly set forth as by the perplexities which often beset the practitioner when he undertakes a diagnosis. The questions which at the outset confront him : What is the trouble? Where is the exact seat of the trouble? What are the complications? loom up formidably, overshadowing the lesser considerations of the means to be employed for relief. To such a degree is the faculty of insight into the cause and nature of disease superior to every other faculties requisite to the successful practice of medicine, that it may be termed the genius of medical instinct towering above the cultured attainments of mere talent.

The science of diagnosis, unlike the science of therapeutics or of prophylactics, cannot be reduced to the plane of exactness, because it involves so much that is intangible, indefinable, and irrelevant, that we never really know when we have reached the extreme limits of inquiry. We may, in the midst of our cautious gropings, arrive at data which justify us in excluding from all further consideration this, that, and the other thing, which at first we surmised might be involved in the apparent complications, and yet be far from a solution of the problem we are seeking to resolve. Aside from the question of probable causes, and behind and beyond the question of idiosyncracies, lies a vast, unexplored field of contingent causes, into which field we may be called to enter, with no guides for our uncertain steps other than those which are afforded by the elementary charts which speculation supplies. Nay, more, we may even here be led into error and pursue misleading paths through innocent misrepresentations of those whose relief we have most at heart ; and so, through following false guides, we find ourselves hopelessly involved without being able to determine the point at which the digression was made. What wonder is it, then,

that with all the resources of therapeutical science at his command the physician often fails? In the midst of variations of symptoms occurring from time to time, no two of half a dozen practitioners are found to agree in their opinions as to what ails the patient. The peculiar instinct, which by some is esteemed a divine gift—the faculty of quickly determining what is the cause, nature, and location of the disease—should be regarded as marking its possessor pre-eminent among his colleagues.

The science of diagnosis in its application to dentistry is only less important in the consequences involved in its right or wrong application. The dentist, like the physician, must often content himself with a tentative course of treatment. He may feel reasonably well assured that a capped pulp is the cause of neuralgic facial pain, and yet, through failure to get a response to approved tests, he may consider it expedient to await later developments. This brings us, first of all, to consider a class of difficulties which confront dentist and physician alike; difficulties arising from ignorance, or insufficient knowledge on his part of what has been done by another who may have had the case in charge. Were time and opportunity always at his command, the dentist who fails to find a way might make it. The patient objects to the experimental removal of a large filling, preferring to take the chances of the dentist being wrong in his speculations. Or, he thinks he can better endure present pain than the possible infliction of worse. On him, then, rests the responsibility which the dentist is often quite willing to escape.

Diagnosis in obscure dental parts is, first, to exclude such symptoms as have no relation to the case. The statements of the patient may or may not aid us; quite as often they possess no significance unless they be drawn out from him by leading questions. To get a correct history of the case is not always easy; the patient, through fear of an operation which he foresees, or imagines he foresees, suppresses some facts of importance, or, perhaps, conscious of some negligent or imprudent act of his own, which being confessed would subject him to censure, withholds statements of importance; or, again, through feeling of resentment toward yourself, or some other dentist whom he judges blameworthy for his present sufferings, even unconsciously exaggerates his symptoms, rather enjoying your perplexity, if he may but succeed in impressing on you a sense of your remissness, and an appreciation of his suffering. With the querulousness of age, the officiousness of youth, and the innocent ignorance of childhood, the dentist is liable to be misled in his first approaches to a diagnosis.

But having escaped from, or successfully penetrated all these snares, the next question is, What really are the symptoms? Our inquiries thus far have been made with an intelligent regard for the ignorance, prejudices, and foibles of our patient, so that we know proximately how much to believe, and how much to set aside of his statements. First of all, in every instance where the object is to discover the source of pain, we have learned to be mindful of that most common and ever-to-be-expected phenomenon, reflex nervous irritation. Ask the patient to indicate the aching tooth, and three times out of five he will direct you wrong. Here, then, we must set our general knowledge, acquired by observation and experience, against his most earnest asseverations, and especially after the failure of the usual tests, must reject his opinion in favor of the indications of precedents drawn from our own more extended knowledge of similar cases.

Intimate diagnosis presupposes care and self-watchfulness that we be not unconsciously led into error through our preconceptions. A patient comes complaining of facial neuralgia. Instantly the dentist's thoughts revert to some occasion, weeks or months before, when, with misgivings, he capped a pulp. Before inviting him to a seat in his chair he has already decided to remove that capping. Such instances of prejudgment, based on nothing more than tangible fears of an unfavorable outcome, are by no means rare. Perhaps the dentist invites confirmation of his own false assumption by some remark which gives the patient to understand that he had rather expected trouble with a particular tooth, and he is, in consequence, doubly surprised when he discovers his error. Most important is it, then, that the dentist admonish himself, first of all, to beware of plausible anticipations, to guard himself against the inferences of mere probability, while at the same time fully recognizing their value so far, and *only* so far, as they suggest means for intelligent inquiry. He must ever be on the alert for exceptions to the usual rule, for those occasional coincidences which mislead all but the most wide-awake investigators. Perhaps my meaning will be more clearly set forth by a citation of instances in my own practice.

Miss B, accompanied by her physician, presented herself at my office suffering from ankylosis of the jaw, the result, as it appeared, of an impacted wisdom tooth. A fistula from which pus exuded, under the lower maxilla, was attributed, by her medical adviser, to necrosis. It was at the patient's solicitation that I was consulted, as I had filled several teeth for her about four years before. Dr. ———, the physician having the case in charge, had treated her

ineffectually for about two months, hoping to close the fistula by the use of injections. The ankylosis coming on gradually had finally produced a condition so serious as to demand immediate relief, and as the first thing indicated was the extraction of the wisdom tooth, we proceeded with the aid of pine wedges to gain space for that purpose, closure of the jaws to within about half an inch having already taken place. Meanwhile, it had occurred to me as highly improbable that the fistula proceeded from necrosis at all, or, indeed, that it had any connection with the wisdom tooth, the roots of which, if not actually curved backward toward the ramus of the jaw, must have been directed backward, as indicated by the position of the tooth lying with its antero-mesial surface toward the distal surface of the second molar. Several considerations were against the hypothesis of necrosis: first, the single fistula, where necrosis usually exhibits several; second, the probability that the fistula—granting the possibility of its having resulted from alveolar necrosis—would have presented itself on the gum near the tooth, or even have burrowed between the facie and found a more convenient outlet at some point on the neck, or even on the shoulder or arm; third, the density of the bone in the immediate vicinity of the dens sapientia precluding the idea of the pus having burrowed downward and forward to find an outlet directly under the second molar. Seeking confirmation of a suspicion that the second molar was directly implicated, a probe was passed upward from the outside far enough to determine proximately that communication might be made with an abscess associated with the posterior root of the second molar. Following this clew tests were made by tapping, applying heat and cold, etc., to the suspected tooth without, however, the usual response expected. The patient declared that hot gutta-percha applied to a gold filling in the crown of this tooth hurt her, at the same time professing no unpleasant or painful sensations when we tapped on the tooth with a heavy steel instrument. In view of indications already detailed, we chose to ignore these protestations, taking account also of the patient's being extremely nervous and anxious. The next step was to remove the filling in this second molar, which was found to occupy a fissure cavity hardly a line in depth. At this stage we might have desisted from further search for the dead pulp, there being nothing to suggest its possible exposure at the time of inserting the filling. Determined, however, to pursue the investigation to the extreme, a fine probe was employed, which was presently made to pass into a minute opening, from which pus at once exuded, and we found our suspicions confirmed. Having extracted the tooth, we discovered one of those

exceptional "elongated" *cornu*, as Garretson terms it, the horns of the pulp being nearly exposed at two other points barely below the enamel line. The patient recovered without serious inconvenience.

This illustrates the importance of avoiding such complications as may possibly arise from knowing only half the truth in the outset. Had the wisdom tooth been extracted, presuming, as is probable, that the anchylosis would have been relieved, the very success of the operation might have entered in as an element to obscure later unfavorable features, so that there is no predicting how much burrowing or chipping away of bone in the suspected socket might have been undertaken to remove necrosed bone where none existed; how much probing and cauterizing of a fistula that had no relation to the wisdom tooth or the anchylosis might have been employed to torture the despairing victim. To be sure of all these contingent sequels would have been avoided through an accident—the accident of our having decided at all events to extract the second molar. Through that accident might have been revealed the superfluity of extracting the wisdom tooth also, had no sufficient explanation of the existence of the fistula been before discovered. But through the actual discovery the patient was spared that infliction.

Another element coming in occasionally to frustrate our efforts at a complete diagnosis is borne of coincidences. One instance will suffice to illustrate our meaning. A patient recently complained of an abscessed tooth, the gum and all of the adjacent parts being involved in severe inflammation. He stated he had consulted another dentist three days before who had opened into the root of the affected tooth—an upper second bicuspid—and once that day, and again the following day, had cleaned and disinfected the root with special care, affording him relief, as he at the time thought, though he admitted when we saw him that he had passed his third night of agony. He said his dentist had confidently predicted absolute relief, his surprise and chagrin being equaled only by the patient's disappointment on the failure of that prediction. Careful examination disclosed the fact that the treatment of his dentist had been after the usual approved manner, the dressing in the root being free from pus, sweet and dry, so that to all appearances the root was ready for filling. No soreness appeared on percussion. Suspecting some complication the same test—percussion—was tried on other teeth situated within the field of the swelling and inflammation, revealing not one only, but two other teeth with dead pulps—the cuspid and the lateral incisor. These having been drilled into pus welled out copiously, giving almost immediate relief. A cure followed their treatment in a short time.

The idea of excluding some teeth, suspected through various improvised devices, to narrow the field of disturbance and afford greater certainty in forming our diagnosis has sometimes been advantageously employed. A lady presented herself complaining of pain in a lower bicuspid or a molar, which, she was unable to decide. The former had suffered from erosion to the extent of having the enamel largely wasted away, while the gum had receded considerably. The molar had a large cavity in the distal surface, decay having been arrested by a process of eburnation, so that it was not at once practicable to determine whether the pulp was alive. Over the bicuspid a piece of French tubing was sprung, the crown being then covered with gutta-percha, so that the tooth was probably perfectly protected from moisture, and from thermal impressions. The cavity in the molar was filled with gutta-percha. In this condition both remained for about a week, no further pain resulting. Finally the bicuspid was covered with a ferrule and cap, and the cavity in the molar permanently filled, both operations being successful. The conclusion at which we arrived as the result of this experiment was, that the bicuspid was the offending organ, since had it been the molar, filling even with so excellent a non-conductor as gutta-percha, would hardly have availed had the pulp actually been even slightly inflamed. Be that as it may, had the disturbance continued after our having filled the molar, and presuming that nothing had been done to the bicuspid, we might have been still as far as ever from knowing where the trouble lay. The alternative in that event would have been, probably, to destroy the molar's pulp, and the sequel to that might still have been the discovery that the bicuspid was the source of the offense, showing that the destruction of the pulp in the molar was superfluous. By this simple device we saved our patient pain and ourselves the reproach of empirical practice.

The importance of guarding against uncertain conclusions in the midst of distractions is often illustrated by the discovery that through disregard of reflex disturbances we have located pain in an unoffending organ. Teeth, the roots of which have been filled years before, are often indicated by the patient as the seat of pain which the sequel finally shows proceeds from a remote source; often, indeed, from the inflamed pulp of a tooth in the opposite jaw. Here again, through inability to determine whether a root contains a filling—if the patient has been in other hands—the dentist needs to be carefully guarded in forming an opinion. The earnest protestations of the patient will need to be disregarded if the tooth indicated fails to respond to approved tests. I have had patients insist

they plainly felt a swelling at the apex of such teeth where none was noticeable, and have found repeatedly such complaints ceased, perhaps, after treatment of an exposed pulp in a tooth in the opposite jaw. By what perverse freak it is that pain so commonly leaves an offending organ and locates itself in another, once diseased, we cannot tell; we know only the general principle that a part having once been the seat of disease is liable to be at times affected falsely in just this way.

My recent practice has been unusually prolific in what is popularly termed cold in the teeth, a term properly enough applied as signifying a disposition in teeth known to be sound to ache after exposure to cold. I have also noticed many cases of neuralgia, of a character that subjects the teeth to suspicion, when in reality they are only incidentally implicated, the affection being of a general character requiring the attendance of the physician rather than the dentist.

—Dr. F. W. Sage, in *Dental Register*.

OUR WEAKER HALF.

It is a fact, familiar, of course, to all, that the left-hand, under normal conditions, is less useful than the right. It is weaker and apt to be smaller. The same is true of the foot. The cause of this difference is less apparent. It is commonly accounted for by asserting that we are a right-handed race by education; that infants are taught from the first by their parents and nurses to use the right hand in preference to the left, and that by constant use it has acquired the greater skill and strength. This explanation might be satisfactory were it not for the fact that the difference seems to extend to the whole body. Now, we do not use one side of the body more than the other; the left foot has as much work to do in walking as the right. Apparently, palm-readers come nearer the truth than fortune-tellers generally do when they say the right-hand is the hand of the race, while the left is the hand of the individual. Health, fortune, disposition, and personal attainments, they say, make lines, convexities, and concavities in the palm of the left-hand, and the matters that concern the family are recorded in the right. As the manifestation of a principle in a particular case would always be weaker than the principle itself, this belief of the chiromancers would explain why the left-hand should be weaker than the right.

—Review.

HOW I MAKE A GOLD BICUSPID CROWN.

Remove all foreign substance, treat antiseptically, and fill pulp canal. Grind away all bulging portions of crown, shaping it so that a band can be perfectly fitted to the gum margin. Use fine gold, gage 26. Cut a strip a third wider than the finished crown will be. Make a simple band, secure the joint with 20k. solder. Now build up the root or remnant of crown with wax or modeling compound to the required shape, except that the proportions must be thinner and shorter than a proper occlusion calls for. Return the band to the root, supposing it to have been previously fitted, and be careful not to disturb the wax. Now mix a little plaster to suitable consistency and fill the projecting end of the band, pressing the plaster against and around the wax. When set, remove the band from the root. If the wax comes with it, melt it out with hot water. We have now an impression of the ideal tooth surrounded by the band. Allow the plaster to dry by holding it over an alcohol flame.

Have at hand an iron ring about one inch in diameter and an inch or more deep. Fill this with prepared molding sand; take the band and bury it in the sand—open end upward—all but about a thirty-second of an inch of the free edge. Mix some whiting with alcohol to a thick creamy consistency, and with a camel's-hair brush paint the inside of the band and the outside of the exposed edge. Allow it to dry. Over the iron ring stretch a two inch section of heavy rubber tubing. (These appliances are known as Melotte's, and are sold at the depots.) We have now a completed matrix in which we will cast fusible metal. When cold, lift from the ring, and wash away all sand and plaster. It will be seen, now, that we have a metallic tooth surrounded by the band, the cervical end of which is clamped by the metal, so that no change can result through subsequent manipulation. The cusps are formed by slitting the free end of the band in three or four places, and with a suitable mallet folding the sections inward on each other; at the same time the band is contained on the metal die. At this juncture the crown can be easily removed from the die and carried again to the mouth for trial. Before completion, however, a few pieces of 18k. solder with flux should be melted inside of the crown to bind all the folds together. Then the inequalities of the cusps can be finished with file or corundum disks, and the occlusion perfectly adjusted. A little practice will show the simplicity of the manipulation.

W. S. Elliott, D.D.S., Sag Harbor, N. Y.

LOCAL ANESTHESIA IN OPERATIONS.

A new process for this purpose is recommended by Wiesendanger, dentist at Hamburg, and experiments have been performed with it in the surgical clinics of Berlin, as well as in the Hamburg Infirmary, where Chief Physician Dr. Scheede applied it very successfully. This process is principally founded on the following simple consideration: It is well known that science has succeeded recently in compressing gaseous bodies, such as carbonic acid, oxygen, oxide of nitrogen, hydrogen, air, etc., into liquid condition, and their expansion, as demonstrated by Pictet's experiments, produces enormous degrees of cold, never known before. Wiesendanger has availed himself of liquid carbonic acid, which may be purchased at any time in large iron bottles. But his special invention is the "psychroter," an instrument destined to concentrate in a metallic chamber the cold produced by the carbonic acid when liberated, and thereby to increase or reduce it, according to desire. This piece is placed on the spot of the body where an operative wound is to be made. It is obvious that as a beginning the apparatus will be limited to smaller operations, while, on the other hand, it is easy to impart to the piece various forms as indicated by the case. The action of the cold on the skin makes itself felt immediately; a slight burning is noticed, just as from a glowing metal, and on removing the apparatus, a white spot, as from burning, is seen, which is entirely insensible. The application, nevertheless, leaves no traces behind, and very soon the skin recuperates its original color. The cold induces the immediate absorption of all blood-heat and causes anemia of the hypodermic cellular tissue, when the insensible spot may be subjected to operations without any further preparation. The psychroter is constructed so as to allow to direct the outstreaming gas into the wound, causing anesthesia of the interior sensitive nerve. At the same time, so the inventor supposes, the strong air current has also an antiseptic action, thereby presenting an advantage over complicated wet preparations. At the same time the wound, he says, is cleansed, and bleedings are arrested. The advantage of the proceeding, if it should prove efficient in all respects, would consist in avoiding the highly injurious chloroform—narcosis in all minor operations, sutures, cutaneous incisions, opening of abscesses, wart, dental, corn and nail operations becoming absolutely painless. Its greatest advantage is to be found in its manageableness.

GIVE THE KID A CHANCE.

An English lady presented herself at the office of Dr. G., a few days ago. She had been wearing a partial plate for some years, made by an English dentist. She informed the doctor that it was a very elegant piece of work. She did not think him capable of giving her as good work, but as she had to have a tooth added, and would be some time before she would return home, she would let him make it.

She did not come that morning to have the work done, but would be back in two days. Dr. G. informed her he would be out of the city, but his assistant would attend to it for her. This she consented to, providing the assistant knew his business. When she departed the doctor informed me of what had taken place, saying, "I have some experience, but I know she is a hard person to please. If you can please her, it means permanent success for you."

Two days later the lady came again, Dr. G. being out of the city. The following conversation took place :

Lady.—Is Dr. R. in ?

Dr. R.—I am Dr. R.

Lady.—You a dentist ?

Dr. R.—I have that honor.

Lady.—You seem quite young ?

Dr. R.—Only twenty-two.

Lady.—Had much experience ?

Dr. R.—A little.

Lady.—Made many plates ?

Dr. R.—A few.

After quite a volume of conversation I was getting tired. I told her if she wished the plate made, just to give the kid a chance. I took the impression. A few days later she called. I gave her the plate to criticise. She liked it very much. The only objection it was not exactly like the one she had. I informed her I did not care to make it like the one she had, as the American dentist did not imitate the English, but always improved. She paid for the plate, and said she would never again judge a man by his age. She seemed wonderfully pleased. And I felt as though I had done my share in upholding Young America, and the intelligence of the rising generation of our profession.

Victory over England ! Give the kid a chance.

G. O. Roberts, D.D.S.

ARISTOL.

Dr. C. N. Peirce says he can confirm the statements made by Dr. Kirk regarding the efficacy of aristol. About a year ago his attention was drawn to this agent by Dr. Kirk, in an inquiry from him as to what remedy he was using for pyorrhea and root dressing. In response, he told Dr. Kirk that he had for some time been using with satisfactory results a dressing composed of oil of cloves, oil of cinnamon, tincture of iodine, and carbolic acid, equal parts of each, with sufficient iodoform added to make a creamy paste; the iodoform in this combination being rendered entirely odorless. Dr. Kirk at that time suggested the use of aristol with oil of cinnamon, which suggestion was immediately put into practice, and the preparation has since then been in daily use, not only by himself, but by others in his house who are equally favorable to it as a dressing, for its antiseptic influence.

In opening into confined cavities of decay where an unpleasant odor is so frequently perceptible, an application of aristol in connection with oil of cinnamon on a pledget of cotton promptly removes the offense, and the conditions are changed from septic to aseptic, so that not only is the result very satisfactory, but in the application itself there is a marked absence of anything disagreeable.

Dr. Peirce during his remarks exhibited a bottle of "thymol-iodide," prepared by Bullock & Crenshaw, which is identical with aristol; this latter term being a protected name given it by the originators of the article, and as such sold for \$1.80 an ounce, while the former can be procured for \$1.25. In its application to severe cases of pyorrhea the response has been very prompt. In its preparation for this purpose place on a glass or marble slab the liquid to be used, oil of cinnamon or gaultheria, then with a spatula rub into it the aristol till a smooth, creamy paste is obtained; this, with a flattened broach, is readily carried into the pockets, or in contact with the inflamed surfaces to be treated. Its influence on irritable gum-tissue is apparent within twenty-four hours, acting both as an antiseptic and an antiphlogistic. I would see the patient at least twice a week, at first; then once a week, then once a month, or once in six weeks. I would have no hesitation in using it every day if I deemed it necessary.

We should try new remedies; of course, cautiously, and yet with intelligent aggressiveness; and not suffer ourselves to lapse into stagnant conservatism.

—Cosmos.

INFECTIOUS AND SEPTIC MATTER IN TEETH. OIL OF CASSIA.

Some use *infectious matter* where I should use *septic matter*. Many times the dentine is filled with poisonous septic matter when it does not necessarily contain infectious matter. We should make a sharp distinction here. The dentine may be saturated with the products of putrefaction or the products of decomposition—septic matter, and no living microbe may have entered the dentinal tubules. In such cases we have the dentine filled with material that is poisonous, and may be poisonous to the peridental membrane, to the tissues around the root, nature failing to get rid of it, yet it is not infectious matter, it is septic matter.

Infectious matter contains living particles, micro-organisms. It is composed of particles that will grow and reproduce themselves. Septic matter may be in solution; it is poisonous. It is the product of the growth of micro-organisms, and it is this product in the dentine that is dangerous in many cases, to the exclusion of infectious matter; for while infectious matter may be in the dentine, may live there for a time, it certainly will not live there very long if communication by which it receives food is cut off. It must receive food in any case, and must get clear of its waste products or it will soon be choked. Though microbes may not be present in the dentine, there is danger of poisoning from the septic matter that is absorbed, filling the dentinal tubules.

We have a different set of conditions where we leave a little bit of softened dentine over a pulp nearly exposed. We may cover in the anerobic microbes. In a short time they produce products that will destroy the pulp, or they may pass through and penetrate into the pulp, and we may have an infected pulp presently from the microbes we have covered in. This action is brought about rapidly, and the poisonous matter escapes toward the pulp. If we have covered them in there with the filling we have sealed up the elements for destroying that pulp. It is not necessary that the dentine be softened more; it may not be a class of microbes that soften dentine. If it is a microbe that attacks the sarcous elements of the body, the contents of the dentinal tubules are attacked just as well. So here we need a disinfectant. What shall we use? Certainly not one of the coagulants; certainly not one that places a barrier to its own penetration by coagulating the albumen, as does carbolic acid, bichloride of mercury, and some others. These are not the antiseptics you should use in this place, but something

that is diffusable, that does not coagulate albumen, something we can depend upon to penetrate in the presence of albumen, and we find that to-day in the use of the essential oils, and among them the oil of cassia is the most potent. There are many of the essential oils that when used in substance will destroy microbes just as quickly as the oil of cassia, and among them may be mentioned the oil of turpentine, but there is none of them that will destroy microbes so rapidly and so certainly with that proportion of the oil that will dissolve in water, or the fluid with which they come in contact in their application in practice as the oil of cassia. This is an important difference; it is a test we want to make. Within the last two years I have been gathering practical experience with the use of the oil of cassia as compared with other antiseptics in use. I cannot think of giving you the benefit of this now, as it would take too much time. I will only allude to one or two cases.

A young girl came to me with an ulcer on her leg, an ulcer that continued to grow larger in spite of treatment, and which resisted bichloride of mercury. When I took hold of the case, I put her to bed, made her condition the best I could, continued the bichloride of mercury for ten days, and increased the strength of the solution till where the solution would run over the tissues the epithelium was taken off; it blistered the skin readily. Of course, after the applications the case was bandaged in each instance, still the ulcer showed no signs of healing.

The suppuration on the surface would stop for ten or twelve hours, but there was no diminution of the soreness in the tissues; there was considerable hardness and inflammation all about the sore. Finding at this time that I could not control the ulcer with bichloride of mercury, I turned to a bottle of oil of cassia, took the cork and simply ran the end of it over the sore and bandaged it up. In twelve hours the soreness had disappeared and it commenced to heal after that one application.

Now, I have tried this over and over again in sores of this character which resist bichloride of mercury, and the oil of cassia will be successful. Take, for instance, the various forms of skin diseases; they come to me every once in awhile. There is no antiseptic that has such great power in its treatment as the oil of cassia, simply because the other antiseptics do not get into the tissues and do the work there; they will sterilize the surface quicker than the oil of cassia will, but they do not get to the points within the tissues where we want them to act, as the oil of cassia.

Another instance, in the treatment of a case of the same class of ulcers of which I have been speaking, my son concluded that he

would not bother with bichloride of mercury any longer; so he dropped some oil of cassia in the ulcer of a young man's leg, put a bandage around it, first covering it with a piece of adhesive plaster. The case was to report that afternoon, but did not report for forty-eight hours. A little too much oil was perhaps put on, for it ran onto the healthy skin. At the end of forty-eight hours the serum had run down from the bandages into the shoe from a blister that had been formed. The oil of cassia will make a blister and draw more serum than any other vesicant I have tried, and make a sore blister, too. In order to produce this blister you put it onto the skin and continue it for a considerable time. If you put the oil of cassia in root canals which have a very large foramen, and hold it against the tissues of the apical space, cover it loosely with gutta-percha so there is continual churning, you may get considerable soreness of the tooth, and you must use it with care.

A rather funny instance occurred in a case of mine a little while ago. I had treated a case of sycosis, where the hairy portion of the face was covered with pimples; it was one of the worse cases of barber's itch I have ever seen. There were a few spots on the back of the neck which I had overlooked. When I discharged the patient I gave him a little bottle of oil of cassia, and told him to touch any active spots that developed. Two or three days after he came to me and said the back of his neck was in a terrible state, that it seemed to be worse. He had applied too much of the oil of cassia and made a blister nearly all over the back of his neck.

—Dr. G. V. Black, in *Review*.

REMOVAL OF PULPS WITH COCAINE.

In September ITEMS, Dr. Patten mentions a case of removing pulps by use of muriate cocaine. Here is another:

On August 30th, a gentleman called at my office with his physician who placed him under an anesthetic. I ground off the left upper cuspid, left lateral and both centrals, preparatory for Richmond crowns. All four of the pulps being alive. The time of anesthetization was one hour and ten minutes, but even during that time I found it impossible to remove the nerves. Owing to physical conditions of the patient, the attending physician did not wish to administer any more ether at that time. Pulps were left in till the third day, when the patient called. After applying a 20 per cent. solution muriate cocaine about five minutes to each pulp, I removed them without pain, with no bad results.

F. P. Webber, Cherokee, Iowa.

A CURSORY GLANCE AT TETANUS.*

My attention was accidentally directed to the subject chosen through having been asked for advice in a case of tetanus.

A railroad employé had his hand crushed, and the case came under the care of the company surgeon. On Thursday morning last the patient was unable to open his mouth, and the surgeon, knowing I had given the subject of tetanus some attention, asked for my opinion. After hearing his statement, I advised amputation of the arm above the line of demarkation, for, according to the description, the hand would have to go anyway, and that it would be well to attempt to save the patient's life by making sure of the entire elimination of the source of the tetanic trouble. I further suggested that if the surgeon wished to test the actual presence of tetanus, he could do so in a few hours by inoculating a mouse with matter from the crushed hand, for if it was tetanus the poison would quickly kill it, and that then the exudate would show, under the microscope, the presence of the tetanus bacillus.

Tetanus is not a disease which falls within the usual province of the dentist; but it is sufficiently related to the territory over which his jurisdiction ordinarily extends to justify our attention, particularly as dental operations, carelessly performed, may induce lock-jaw. Cases have been recorded, for instance, of tetanus directly traceable to the irritation set up by replanted teeth.

The derivation of the word tetanus is Greek, and its literal meaning is "stretched," by which is accurately described the condition of the muscles affected. Notwithstanding the disease has been long recognized and much written on, there is yet considerable doubt as to its pathology. Two forms are recognized, traumatic and idiopathic, the former arising from a wound on any part of the body, though more commonly following injuries to the extremities, and the latter where there is no apparent lesion of the skin. It is, perhaps, an open question whether the latter, though exhibiting the same or nearly identical symptoms, is a true tetanus.

Traumatic tetanus has its origin in a wound of the surface of the body. As to the manner in which the characteristic symptoms are set up there is no positive knowledge. By some it is regarded as a reflex action, and undoubtedly it often bears this appearance. Others claim that it is caused by direct impingement on the nerves leading to the wounded part. The latest theory on the subject is that it is caused by a bacillus, and a so-called tetanus bacillus has been isolated. Since this theory was promulgated, the bacillus

* Extract of paper read before the New York Odontological Society.

described has been seen by many other observers. Indeed, it is found as a constant accompaniment when searched for. In 1888, M. Bos-sano showed that the disease was bacterial in its origin, but that the transmission of the virus by inoculation through several animals brought about its attenuation and ultimately rendered it inert as regards the production of the disease. Personally, I believe the bacillus theory is the true explanation; that tetanus comes from inoculation, and that otherwise the disease is not tetanus.

As to the source of the inoculation, it has been shown that most garden dirt—land that has been worked—is infected with this particular bacillus. Soil from different parts of the world was used in experiments on mice and guinea-pigs, and in nearly every instance it was found to be sufficiently charged with tetanus bacilli to produce death. It was also found that the more organic matter the specimen of soil contained, the greater the number of bacilli. We have here perhaps a clue to the universal locality of tetanus. Rusty nails, to which are commonly and correctly ascribed superior powers in the causation of lock-jaw, are also likely to be infected from the same widespread source. What wonder, then, that wounds exposed to such common opportunities of infection should be inoculated with the fatal poison?

For a statement of the symptoms of tetanus, I can perhaps do no better than to quote Macnamara:

“Tetanus almost invariably commences in the rigidity of the muscles of expression. In the course of a few hours, the muscles of mastication and of the head, neck, and back become involved, so that the patient experiences difficulty in opening his mouth, or in moving his head from side to side; and deglutition is impeded by spasmodic contraction of the pharynx. The rigidity of one or more of the groups of muscles above referred to is constant throughout the whole course of the disease; but in addition to this, from time to time, these muscles are thrown into the most frightful spasms; in this way the patient's body is sometimes bent like a bow, the whole weight of the trunk being supported on the back of his head and heels. The abdominal and thoracic muscles are also implicated, and hence the patient's belly is tense and hard, and the walls of his chest expand imperfectly in the effort of breathing. The muscles of the arms and legs are often extremely rigid and convulsed in a most violent manner; they are the seat of terrible pain. The interval between the paroxysms of spasm of the affected muscles is uncertain; sometimes the cramps last only for a few seconds, at other times for five and even ten minutes. The most dangerous are evidently those in which the muscles of respiration are principally involved, for death is generally caused in this disease by the interference with the respiratory process, the chest being as if compressed in a vise. In consequence of the condition of the muscles of the neck and thorax, the sick person is unable to speak, but his intellect generally remains clear up to the last, nor are the other functions of his body materially deranged. The patient suffers much

from hunger and thirst, which he is unable to alleviate ; and, above all, he longs for sleep, which is frequently denied him in consequence of the recurring spasms. The surface of the skin is bedewed with perspiration, and the pulse rises and falls with the intensity of the spasms and the duration of the disease."

Tetanus runs a definite course. Sometimes it kills in a few hours, but the greater number of victims die from the seventh to the eleventh day after the commencement of the disease. If they survive the twelfth day, a cure usually occurs.

As to the treatment, thorough understanding of that is, perhaps, not so important to us as dentists as is a full and accurate knowledge of the diagnostic signs of its presence, more especially as its first expression is found in the face, and one of its most serious phases in the locking of the jaws. In general, it may be said that there is really but little to be done in the way of internal medication. Most of the drugs which have been prescribed to arrest the progress of the disease, or allay the violence of the spasms, fail to accomplish recognizable results, unless pushed to an extreme which threatens grave and scarcely justifiable complications. The first indication should be the thorough cleansing of the wound, which should be placed at once in an aseptic condition, and kept so. If such a procedure were promptly instituted and skilfully carried out in all cases of wounds, I think it extremely probable that traumatic tetanus would cease to find victims. Professor Garretson regards phenol sodique as a sheet-anchor for dressings as a prophylactic against tetanus.

In any event, when tetanus is developed, it is a safe plan to bend every energy toward keeping the patient alive till the malady has spent its force ; more especially because of the well-ascertained definiteness of the course of the disease, though its duration is uncertain, so that, if vitality can be preserved through the terrible agony that must be endured under the double deprivation of natural sleep and normal nourishment, there need be little apprehension of fatal consequences. Under the conditions presented this is no easy task. The administration of food and the procuring of sleep are alike difficult and uncertain. As food, milk is, of course, the staple, and as a sedative hydrate of chloral.

If the germ theory be finally accepted, surgical interference, where practicable, will be indicated, and fortunately the great majority of wounds which eventuate in tetanus are so situated that amputation of the affected part is feasible. Instances are on record, also, where division of the principal nerve, or in other cases stretching of the nerve leading from the wound, has completely stopped the progress of tetanus.

—G. L. Curtis, in *International*.

ALKALIES.

We have the organic alkalies, the so-called ptomaines, about which I once read a paper in Boston, and I was sorry to see that because I gave it under its true title it was not properly appreciated. These organic alkalies are of much greater importance to us than lime, ammonia, and all those common alkalies. I had occasion, about five years ago, to translate the work of a German chemist, Dr. Brieger, on this subject. He had succeeded in isolating the poison which is found in hydrophobia. The poison which causes the symptoms of hydrophobia is an alkali, and that alkali is manufactured by the microbe which produces the hydrophobia. I have since made many experiments, also to see if I could not get some of these alkaloids. I have succeeded in producing a few of them described by Dr. Brieger, but the work is extremely complicated and very difficult. To make these experiments, a part of the body has to be exposed to the action of the microbes from a pure culture. For instance, you may take the liver, the heart, etc., these organs must be exposed to the culture of the microbes for from six to eight weeks, and gentlemen with lively imaginations can readily understand that this kind of work is one that should be conducted with open windows. These poisons, when produced, are remarkable. The following have been well isolated: That of typhoid fever; that which produces in summer frequent and disagreeable complaints after eating ice-cream, stale milk, and stale cheese, etc.; that of poisonous mussels. As I have said, the poison of hydrophobia has been isolated. I recently had the pleasure of reading an interesting paper by a physician who furnishes proof that life can be killed only by life. Take, for instance, the disease of diphtheria; this has been treated many times by various applications, but the remedy for this disease seems to be erysipelas; the microbe of erysipelas, in a number of well-observed cases, entirely destroyed the microbe of diphtheria. In the experience of this physician, he found that by the application of this remedy he produced erysipelas to a slight extent, but it stopped developing all at once, and in a few days the patient under treatment rose quite well and quite rid of diphtheria and erysipelas. The two microbes had killed each other; he persisted in his theory, and inoculated a number of persons suffering from diphtheria with the microbe of erysipelas. The affection apparently started and then disappeared, while the diphtheria also declined, and he has lost but one patient out of many treated in this way. This is a solution which I have always

dreamed of in the field of microbic investigation. Life can only be killed by life; I don't think we can kill life by the application of inanimate drugs. My belief and my line of philosophical search certainly would not lead me in that direction.

To reduce decay we should kill the microbe of lactic acid which produces the decay; the portion of the tooth which has been destroyed during the process of its activity cannot be recuperated. I do not think we have even the slightest hint which will suggest to us any way in which lost tissues can be recuperated. The man who can tell us how decayed matter can be restored has found the fluid of eternal youth, the elixir of life; for the same principle which will recuperate teeth tissues will rejuvenate the whole person from head to toe. The secret, therefore, of recovering lost tissue is, in my opinion, not yet accessible. I even doubt if we are in a position to investigate that subject, and we should therefore direct our attention to a much easier problem of how to ward off an injury. There seems to be a well-settled principle that there are two contending forces everywhere in life, the one attacking from within and the other from without; but this subject is not sufficiently realized. If we could appreciate this properly, we could more readily understand the fact that by this simple combination ninety-nine one-hundredths of all the cases in regard to the decay of teeth, etc., could be explained, each one individually. I do not think we will progress by debating in general about "activity of tissues;" "her health declined," etc. Beyond the principle of the survival of the fittest, I do not think there are any generalizations on that subject.

The experiments that have been begun in the line of organic alkalies are investigations which lead up a little to that thing which humanity is striving after—the elixir of life. Many of these organic alkalies are deadly and destructive. Take, for instance, the poison produced by hydrophobia—one-twentieth of a grain produced the disease in a rabbit, and one-sixth of a grain of the poison taken from the brain killed a rabbit. If we can find such an active agent in the line of destruction, it is reasonable to suppose we can find just as active a power in the line of building up. We have only just begun our discoveries in the line of destruction. The investigation of this subject in the line of building up our bodies is not yet begun; the microbes of building up have not yet been investigated, but only those of destruction. Yet they are numerous and important, and should receive our careful and thorough attention. We are too apt to look on a microbe as something terrible,—an enemy to health and life. There are as many essential to both as there are of destruction.

—Prof. Chas. Mayr, in *N. J. Society*.

ARISTOL AS A CANAL-DRESSING.

The use of a solution of aristol in essential oils as a medication for canal-dressings and as a topical dressing in acute pulpitis naturally suggests itself. A somewhat extended use of it leads me to the following conclusions: That as a root-canal dressing its use should be strictly confined to those cases where pericemental inflammation is not present, because it does not seem to possess antiseptic qualities of a sufficiently active character to enable it to overcome quickly the septic conditions caused by putrefactive changes which are met in the canals of teeth. Such conditions demand the application of more active disinfectants and antiseptics. An aristol root-dressing prevents re-infection from without, and is a sedative root-dressing under a probationary filling.

As an antiseptic in conjunction with permanent root-fillings, I have found it valuable in connection with gutta-percha, as follows: A 10 per cent, or even stronger solution, if desired, of aristol in chloroform, in which it is freely soluble in all proportions, has dissolved in it sufficient gutta-percha to render the liquid of a creamy consistence. This may be used in the same manner and under the same conditions in those cases where chloro-percha is found to be useful. Or in large canals where gutta-percha cones can be used with accuracy the cone may be dipped in the solution of aristol in chloroform and at once carried to position, the superficial solvent action of the chloroform on the cone greatly aiding the process, while we maintain complete asepsis of the canal by the aristol on the surface of the root-filling in contact with the canal-walls.

I have made use of aristol in connection with root-filling materials by another method, which so far has yielded satisfactory results, but too few and insufficient in time to enable me to report fully. A strong solution of aristol is made in the oil known to house-painters as "Japan dryer," sufficient of the drug being added to make the liquid somewhat thinner than glycerin. Into this is worked with a spatula freshly calcined oxide of zinc till the mass is like putty, to be worked into the root-canal. In a few days the mass becomes quite hard, and seems to fulfil admirably the requirements of a root-filling. I have used it principally in the canals and pulp-chambers of deciduous teeth, with satisfaction.

In the use of carbolyzed cosmoline on cotton as a permanent root-filling, the replacement of the carbolic acid by aristol is an advantage, and avoids the nastiness of the present method. As an application for the relief of pain in acute pulpitis, either the chloroform or cinnamon oil solution generally gives immediate and satisfactory results.

—Dr. E. C. Kirk, *Ed. Cosmos*.

OUR DENTAL COLLEGES.

In Kansas Association.

Dr. H. W. Davis: Our colleges are springing up all over the country like mushrooms around a manure pile, advertising to grind out professional and proficient dentists in two terms of six months each, when in reality a student only receives instructions two terms of four months each. Great gosh! think of it, gentlemen. Green, raw, in many cases unprincipled, uneducated, and non-adaptable material, contorted, convinced, and converted into professional prides by a smearing over of the exterior with a coat of intellectual varnish, in eight months. Why you might as well try to squeeze lemonade out of a dish rag. What a metamorphosis must have taken place in that student's brain, and what an amorphous condition his knowledge must be in. It's a shame and outrage, and preposterous in its absurdity; unfair to the student and unjust to the patronizing public. Look at the increasing number of students in the numerous colleges, with their walls bulging and bursting with incapacity to accommodate their matriculates, and the incapacity of their green patrons when they have crowded through the building. Why is this thus? Simply because they can obtain a degree of D. D. S. in a shorter time, with less brains to start with and less application, than any other profession. The physical, mental, moral or social ingredients of the applicant are not taken into consideration or required at many of these so-called colleges. It's the quantity they desire, not the quality. What wonder is it that the country is filling up with charlatans and men eager to take advantage of their innocent patrons, and thereby disgrace and injure the entire profession; instead of the faculty that turned them loose with a sheep hide that would have more intrinsic value had it wool on both sides. It is the competition of these colleges and their graduates that reduces prices and becomes destructive to the profession. People do not and cannot discriminate between one man and another. How can they? His sign reads D. D. S., he is a graduate of Kansas City, or St. Louis, or Chicago, no matter where. He has his papers of qualification. It has not cost him much to go through this D. D. S. incubator, consequently he can afford to do cheap work, and he does and he always will.

* * * We are claiming an equality with physicians. We should be able to counsel and converse with them intelligently, without a feeling of embarrassment or inferiority. If we do this we must select our best matriculates, and give them a thorough

course in the various branches of the profession. And that cannot be done in two years of six months terms. Many of these so-called colleges put a dozen students, medical and dental, on to one cadaver, and warn the dental students not to go below the Adam's apple at the risk of their D. D. S. degree, and the medical students not to go above in their investigations and researches. A dental student told me that when he dissected he found the systole of the heart, but he could not find the diastole. Another said he devoted the first week in the operating room to scraping "saliva" and "cartilage" from teeth. These expressions are not to be wondered at when a student's cranium is crowded, cramped and crammed with the entire knowledge of the profession in two terms of four months each, and a lapse of six months between them.

Dr. Patterson: I have listened with great interest to the paper. It concerns me a great deal, and I listened to hear whether any one was poor enough to do reverence to dental colleges. At one time in my life, perhaps before the essayist was born, I wrote papers much in the same strain. Afterward, when I knew more and became better acquainted with the profession, those inside the dental colleges and outside, I began to change my opinion, till, at this date, I am so weak and ignorant as to believe that the dental colleges are the largest and greatest factors in dental education in the world to-day.

It came about through careful observation of college men, college methods and college work. I find the best and severest critics of college methods in the colleges. We know our imperfections. Men outside of college do not know what college men have to contend with. If they did, it would be a matter of continual surprise that they do so well. At this time in the progress of dental education in the United States, an association like this ought to uphold the hands of the college men every hour, day, week, month and year. Why, take into consideration the question of dental legislation. Where must practitioners come from? The colleges. Then why this impugning the motives of college men, as a class? Why not uphold with legitimate criticism? Much of the paper I consider illegitimate criticism. I know the defects in the colleges; no one knows them better. Have visited them all, and some in the old country, and know them well. They do not deserve the criticism, as a class, which has been placed on them to-day. If individual colleges deserve it, it should be given them, and not be put on the whole body of colleges throughout the land. It is not fair. You must admit, with me, that the men in the colleges compare very favorably with those outside. Even those who have spoken against

them so loudly admit that they have done more good than harm. I am glad to hear even that slight admission. It proves my assertion that more good has come from men in colleges than those outside. A great deal of the opposition comes from the fact that you are not acquainted with the difficulties which the college men have to contend with; and when you impugn the motives of college men, you ought to know whereof you speak. I cannot enter into the *minutia*. I want you to help us along; don't stay our hands. We have done much; strengthen our arms. We are ready for just criticism, but we don't want intemperate criticism.

—*Western Journal.*

ACIDS AND ALKALIES—ACIDITY AND AVIDITY.

Most of you may reasonably be supposed not to be special chemists, and, as you all know, chemistry, as taught to non-chemists, is very different from what the chemist himself sees and finds. For instance, I am unable to give you the exact definition of an acid or an alkali, because, while the extremes are well pronounced, there are so many intermediates that the line of demarkation vanishes. The only definition I can give to you sounds ridiculous—namely, a strong acid is one which is completely neutralized by a strong alkali, and a strong alkali is one which is completely neutralized by a strong acid. Certain superficial methods of recognition do not furnish in reality a good criterion, because they are not good in all cases. Circumstances alter cases so much. That which is an acid under one condition, exhibits characteristics of an alkali under another condition. For instance, there exist compounds of sulphuric acid with acid radicals, in which these acid radicals appear as alkalies, and, while not completely neutralizing the sulphuric acid, they at least diminish its acidity.

Take an alkali like oxide of zinc—when combined with sulphuric acid to sulphate of zinc, the sulphuric acid is not completely neutralized; the salt reacts acid to litmus. This oxide of zinc combines also with alkalies, and there plays the part of an acid. The alkali is not neutralized, but slightly diminished.

There is a group called manganites, in which the peroxide of manganese appears as an acid, while there exist salts in which it appears as an alkali. I do not think the term "acid" is one which is susceptible of exact measurement. The distinction between acids and alkalies is somewhat based on a very uncertain sense—that of taste. We have not been able to measure taste as we can measure light. Take picric acid, for instance; it has not the least acid taste, being

only bitter, and yet it is a powerful acid. Among alkalies we have ammonia, which has a very powerful taste, while magnesia has very little such taste; yet the latter is a very much stronger alkali than ammonia; so that our common impressions are liable to lead us into the idea that there is very much greater difference than there is in reality. Our senses were evidently not made to be measuring instruments. Their purposes are those of every-day drudgery, to run the daily course of life.

For the sake of convenience we may group acids into five classes.

1. Very strong acids.
2. Diluted strong acids.
3. Strong organic acids.
4. Weak and doubtful acids.
5. Acids which do not show their acidity by simple tests.

To the first group belongs the well-known trio, sulphuric, hydrochloric and nitric.

To the next group, phosphoric, the thionic acids, brom-hydric, and iod-hydric acids.

To the group of strong organic acids, oxalic, butyric, citric, picric, tartaric, lactic, and many nitro acids.

To the group of weak acids, carbonic acid, sulphydric acid.

To those which give not sufficiently the acid reaction, boric acid, silicic acid.

Some acids which seem to be very strong at first investigation, prove very weak chemically. For instance, hydrofluoric acid is only one-fifth as strong as oxalic acid; sulphuric acid only one-half as strong as nitric; acetic acid only one two-hundredth as strong as muriatic, and only twice as strong as carbonic acid.

And just here I will remark that the fact of the existence of very weak acids chemically, while strong to the taste, is a subject which I do not think dentists have sufficiently considered; because the original investigation about them was published in a purely chemical work by Professor Thompson. He has investigated what he calls "avidity." We have all heard of affinities, but avidity is a subject which has not been familiar enough to us, though it is of great importance. Suppose I were to mix some sulphuric and acetic acid together. I put a little alkali in the mixture, not enough to neutralize them both. The question now is, In what proportion will that insufficient amount of alkali be seized by the acids present? It will be seized in proportion to their "avidity." So the avidity gives you to an extent the measure of the activity of an acid under some circumstances. This avidity of acids can only be obtained

relatively. The acid which has the strongest avidity is muriatic acid, and almost equally as strong is nitric acid. If I mix a pint of muriatic acid and a pint of nitric acid and a quarter of a pint of alkali, the two acids would seize the alkali in equal proportions. But suppose I take sulphuric acid, which is not as avid as muriatic or nitric acid, having only fifty-nine one-hundredths of the avidity of muriatic or nitric acid. If I were to make a mixture of muriatic and sulphuric acid, and put an amount of alkali into it insufficient to neutralize it, two-thirds of this alkali would be seized by the muriatic acid, and only one-third by the sulphuric. So that in this fluid, besides the two acids in excess, there will be twice as much chloride (speaking of equivalents, not by absolute weights) as sulphates. Oxalic acid has two-thirds the avidity of muriatic acid, and on the other hand acetic acid (the acid of vinegar), which is very biting, indeed, has absolutely no avidity compared with these acids; that is to say, if I were to put one thousand pints of acetic acid with one pint of sulphuric acid, and put in just enough alkali so as not to neutralize both, every atom of sulphuric acid would have to be neutralized before the first atom of acetic acid could be neutralized by the alkali. So, if we were to mix one hundred pints of the strongest citric acid and one pint of muriatic acid with the proper amount of alkali, again, every drop of muriatic acid would have to be saturated by alkali before one drop of the citric acid would be allowed to combine.

This side of acid questions is just beginning to be considered properly, and in dentistry I think it is one of very great importance. Yesterday the question of erosion came up. The acid which causes this erosion (if it is caused by acid), or, I will say, the acid which *might* cause this erosion, certainly acts in proportion to its avidity. That is to say, suppose we have an acetic acid. This is a volatile acid, and is much weaker than a non-volatile acid. So the acetic acid has less avidity than lactic acid. Hence, if there was a mixture of lactic and acetic acids, the lactic acid would seize the line before the acetic acid would act on it. If you expose a piece of marble to the action of acetic acid, it will be dissolved in a crumbling manner, while if you expose it to the action of muriatic acid, it will remain smooth on the outside and become quite polished; and if you expose it to the effects of an acid the avidity of which is somewhere between these two, it will also be eaten smoothly. As a rule, in teeth a smooth and not a crumbling erosion is found, so that acetic acid is certainly not one of the acids causing that erosion, yet by many it is thought to be the most prominent cause.

The exact avidity of many organic acids has not been determined, because of the difficulty of separating the products.

This avidity explains also in a satisfactory manner the reactions.

If we distil salt with sulphuric acid to obtain hydrochloric acid, the process is one of avidity more than affinity.

I do not care to go into the question of avidity any further, because it may not strike you, as dentists, as of interest, though to us chemists it is of great interest.

Now we come to another aspect, that of acidity.

Acidity is of our sense of taste, and of nothing else; that is to say, if you put ten thousand drops of water with one drop of sulphuric acid, you will perceive some acidity should you place it on your tongue, while if you mix together ten thousand drops of water and one drop of acetic acid, you cannot taste it, though, strange to say, you can smell it a little. If you mix ten thousand drops of water with one drop of oxalic acid, you can just about detect the presence of acid by taste. That is acidity. I do not think we have any other measurement for the acidity of an acid. The *affinity* of an acid (which is a term also frequently used) implies far more force than activity or avidity. By the affinity of an acid we understand its potentiality under given circumstances to combine with other chemicals—that is to say, the possibility of a substance to combine. When speaking of affinity the circumstances of the experiment are of the greatest interest. To illustrate: Take silicic acid, which is not subject to the test of taste; place some silicic acid with some sulphate of soda in a crucible, heat it and wait till the soda melts, and the sulphuric acid comes off in great quantities, and finally every trace of sulphuric acid will be expelled by the silicic acid. The affinity of the acid has been greatly increased; the avidity, I presume, has also been increased; the acidity has not increased at all. So with boracic acid. I doubt if by its taste it can even be called acid, but if it is melted it is found to have very great avidity and affinity. So it is with a great many other acids; but I will not go into details, as I do not wish to be tiresome.

Now, as to the tests in the mouth for acids. Yesterday litmus paper was suggested, and various methods were spoken of in which to get a good, sensitive litmus paper. Litmus is excellent for most purposes, but it is too easily affected by carbonic acid, which will turn it quite red. It is also affected very much by the vapors of ammonia in the air, which very likely reduce its sensibility. For that reason I consider litmus paper somewhat treacherous in some

tests. The best test is an alcoholic solution of carmine, which has to be applied of itself; you cannot make paper of it. Carmine turns yellow with an acid, and a purplish red with an alkali. There is a chemical substance (phenolphthaleine) which is perfectly colorless with an acid, and wine-purplish with an alkali. This can be used on paper. Ammonia affects it but little. There are a large number of similar test-papers which have been made out of aniline dyes, which are very useful. I have made this a special subject of investigation, so as to produce a test-paper which dentists can utilize for the various chemicals they use in their laboratories. For instance, a dentist wants to know whether his hydrogen-peroxide is still good or not. The best test is a paper made with a little iodide of potash, a little starch, and bicarbonate of soda, the mixture being smeared on ordinary blotting-paper. So long as the hydrogen-peroxide is good it will produce blue spots on that paper, and when it produces only a purplish spot, or no spot at all, it is worthless. That is a simple test, and this paper will keep indefinitely. For the mixture I take five grains of iodide of potash, five grains of starch, and half a pint of water, with a small pinch of bicarbonate of soda, and put the mixture on any kind of paper that will soak it up, and so long as your hydrogen-peroxide is good it will produce a blue spot on the paper. I have found this a very valuable test-paper. Then, for the various kinds of acids that you meet, an excellent paper is a decoction of logwood. With most of the chemicals this will turn different colors; with an acid, bright red; with an alkali, purple; ordinarily it is a kind of brownish red, and I consider it very useful. With a logwood test you can tell ten times stronger acids than with the litmus. A volatile acid on such a paper produces a redish halo around a bright-red spot. A non-volatile acid produces only the spot with no halo, because no acid vapors spread around it. The test-papers are, I think, very valuable for practical purposes, and you can very easily make them, and with weak and strong acids and alkalies the indications are very good and valuable. Among other substances, aropeoline, for instance, is very useful; with an acid it is yellow, and with an alkali it is red, and the change is prompt and striking. You have probably seen the experiment where a man pours water from a pitcher into a tumbler, and the moment the water touches the tumbler it is turned into red wine; then he takes the tumbler and pours the wine back into a pitcher; it is perfectly plain, you can see that it undoubtedly is red wine. But the moment afterward he pours it out of the pitcher as water again. This is done by the use of phenolphthaleine, which is perfectly colorless and as clear as water; but

when mixed with alkali it becomes a fine purplish-red. So when you spread it on paper in the presence of an alkali it will show bright-purple spots. On these papers you can also test chemicals that belong to the organic alkaloid group—namely, morphia and such chemicals.

As a rule, I do not prepare a long paper, because it is impossible for me to ascertain beforehand what will meet with the popular demand, and I should be apt to bore the Society with general technicalities and complicated technical subjects, not knowing exactly what you would like to have me tell you.

—Prof. Chas. Mayr, in *N. J. Society*.

ARE GAS FURNACES A SUCCESS?—REPLY TO THOMAS FLETCHER, F. C. S., ENGLAND.

Mr. Fletcher makes the assertion that it is sulphur that causes gassing. How could this be so when a pure hydro-carbon is used and carbonic acid gas bubbles are formed? In the porcelain bodies and enamels used in my practice, not a particle of lead enters into their composition.

The claim that the muffles crack owing to sudden changes of temperature is also erroneous. A muffle may be heated to a blinding white heat from twelve to twenty times in succession, and as many times placed on a solid block of cold iron, and will not crack. I will take the same muffle when at a white heat, and place on its center a piece of ice to cool it unevenly. I will take the same muffle at a white heat and plunge it into a pail of cold water, and as soon as cool, and while wet, put it directly into the furnace when the blast is at the highest temperature, and fuse sectional block work. After that I will use it every day for three months, fusing the regular high grade continuous gum material, and not be able to find any cracks that will need repairs. All this with the ordinary fire-brick muffle as made by Hyzer & Lewellen, of Philadelphia.

I can show muffles that have been in constant daily use for seven months in the manufacture of porcelain teeth, subjected to extreme temperatures, in which there is not a crack.

To give greater evidence of the correctness of my claim that the CO, and free carbon unite with the oxygen contained in the porcelain body to form CO₂ bubbles, and thus produce the so-called gassing, I have invited to my laboratory several witnesses who will testify to the actual demonstrations consisting of the

following experiments. In this instance I selected a furnace containing a platina muffle, in this a porcelain body composed of kaolin, flux, feldspar, silice and titanium was fused to a perfect glaze, holding a rich color and thoroughly dense. Here is conclusive evidence that the operation was entirely free from contamination from all gases in the combustion chamber.

The first test for gassing consisted in placing a quantity of the above form of body in the muffle, and then elevating the temperature to almost the fusing point, when a small pledget of asbestos fiber was saturated with alcohol and then thrown into the muffle. The asbestos was first heated in the muffle to purify it, so that we could be sure of having nothing but pure alcohol present. At this high degree of heat the alcohol was rapidly decomposed, the carbon separating from the hydrogen, and the deposition of free carbon was plainly visible settling on the surface of the porcelain, here to combine with the oxygen contained in the porcelain to form the small bubbles CO_2 . Consequently, when the specimen of porcelain was removed from the muffle it was remarkably porous, and so thoroughly decolorized as to appear almost a pure white, all the coloring having disappeared.

Second experiment. Another porcelain body was placed in the muffle, and a small piece of pine wood thrown in just before fusion. The result was almost identical with that of the alcohol.

Third experiment. A piece of electric carbon, such as is used in the arc lamps, was placed in the muffle with another piece of body, and the results were practically the same as with the alcohol test; though this class of carbon is very dense when removed from the muffle, it was almost the same size and shape as when inserted, having lost but a small portion of its bulk.

Fourth experiment. Another lot of the body was submitted to the test by substituting a small quantity of sulphur in place of the carbonaceous substances, and while the sulphurous fumes showed a tendency to remove some of the coloring, the gas bubbles were absent. The following were witnesses:

J. E. Clark, M.D., Professor Chemistry and Toxicology, Detroit College of Pharmacy, P. P. Nelson, D.D.S., W. G. Howley, D.D.S., De Lloyd O. Duncan.

I have had twenty years' experience in the use of coal and coke furnaces in fusing the various forms of porcelain bodies and enamels, and ten years' constant trials of the various gas furnaces, including those of Mr. Fletcher and Mr. Verrier, also several forms made in this country, all of which failed to provide a means that would protect porcelain wares from the detrimental action of carbonic oxide

and free carbon. Good work can only be done in a position entirely free from contamination with the products of combustion. I have seen what amateurs pronounced perfect work done with an open flame, but have not known of any one of experience being deceived with such sickly-looking results. In no instance have I been able to find a specimen of fused porcelain done in an open flame that presented that rich color and translucency equal to the products from either coal or coke furnaces, nor have I been able to obtain the same toughness till it was accomplished in the manner described in my July article.

In my own laboratory I have constantly on tap coal gas, natural gas, and vapor of petroleum, and at will can operate the double muffle furnaces, selecting any one of these fuels, fusing either high or low-grade porcelain with unerring precision and no possible danger of injury from the products of combustion.

If my co-laborers who have coal or coke furnaces wish to prove my discoveries to be true, all that is necessary will be to throw several small pieces of wood, charcoal, or bees-wax—in fact, any substance containing carbon—into the muffle just before fusion of the porcelain. They will then be convinced by seeing the trouble produced in every instance.

The lesson will teach them how important it is to keep all traces of wax or paste, such as gum tragacanth or starch, out of the muffle just before fusion. From careful observation, I am convinced that our manufacturers have large quantities of teeth destroyed, made too porous, owing to placing slabs of teeth in the muffle before all the paste is thoroughly burned out; hence the numerous small CO₂ bubbles found in so many of our sectional block teeth.

A practical gas furnace is one that will do perfect work when operated by any of the available fuels, such as coal gas, natural gas, or the vapor of petroleum, and be capable of fusing all kinds of porcelain wares in a reliable manner, whether they contain lead or any other suitable substance. An apparatus may, in its construction of parts, be complicated and expensive, and yet produce a simple effect, and result in the greatest comfort to those who are directly interested in its products. A machine that will do a technical piece of work all by itself, without any errors or mistakes, and not require constant personal supervision, one that your office-boy may easily control while your valuable time is at the head of affairs, in the long run is cheap, and will, in the economy of time, soon return the cost of original outlay, to say nothing of the solid comfort of always having practical results.

C. H. Land, Detroit, Mich.

Items.

I think the ITEMS the cream of dental journals. I have other journals, but go for the ITEMS first.

J. H. Robinson, Morrisville, Vt.

I think the department of Questions and Answers, as conducted by Dr. Francis in the ITEMS, is one of the most interesting, as well as *instructive*, features contained in the whole list of dental journals.

C. H. Haines, Dexter, Me.

To prevent the metal in weighted rubber from irritating the gums, I use *non-weighted* rubber for the last layer when packing my flasks. Thus I get a smooth gum-surface with the desired weight.

John K. Morse, D.D.S., Taylorsville, N. C.

EDITOR ITEMS:—Some of us old grand-daddy "tooth-dentists," who have never had time to go to school to our sons and grandsons, in whom we are well pleased, are getting childish and want some sort of a title to. And as the boys are a little proud, vain, jealous, and stingy, I propose we manufacture one of our own; and for *Practical Dentist* we dub it P.D.

J. W. Greene, P.D., Chillicothe, Mo.

THIRTY-SIX TEETH IN A SET.—I know a man who has *thirty-six* natural teeth, as perfect in form and arch arrangement as any set of *thirty-two* I have ever seen. The surplus number consists of grinders, the fourth molars being as perfectly formed and nearly as large as the rest.

As this is the first I have ever seen in thirty years' practice, I take it to be very uncommon. Who has seen a similar one?

J. W. Greene, P.D., Chillicothe, Mo.

EDITOR ITEMS:—I replace a tooth broken from a bridge without removing the bridge from the mouth, thus:

I cover the metal portion from whence tooth was broken with wax, press a suitable tooth in the wax in proper position. The pins of tooth-mark in the wax places for drilling holes in the bridge to suit pins. The holes should be counter-sunk on the buccal side. Rivet the pins with a dull point in an automatic mallet, and polish the head of the rivet. This mode of replacing a tooth is almost painless to the patient, and of little trouble to the operator. It makes a solid repair. *A. W. Davisson, D.D.S., Holley, N. Y.*

Alveolar abscess will continue after a root is filled if the abscess is not removed. Though it is caused by decomposing pulp, if it has no outlet through the crown, the gas and pus are forced out through the apex into the alveolus, inflaming and decomposing it. The root can be safely filled and the abscess entirely broken up by running a drill thoroughly into the affected part close to the apex of the root, either through the root, or from the labial side of the alveolus. It is the only way to break up alveolar abscesses and save the tooth.

U. Smith, Fresno, Cal.

AMALGAM GETS "FITS."—Five years ago a young man of excellent habits, but for several years afflicted with epilepsy, came to me about his teeth. I found a number of large amalgam fillings, a frothy saliva and "spider webs" from jaw to jaw. He had no pain, but a very bad taste in his mouth.

I removed the amalgam, and refilled mostly with cement; but some gold. This was five years ago, and he has never had a spasm since.

Question: Who can tell me, *in English*, the relation between the oral battery and the nerve disorder? Had the amalgam anything to do with this disorder? Was it relieved by the removal of the amalgam, or by my treatment?

J. W. Greene, Chillicothe, Mo.

A BROKEN JAW.—Mr. V., aged forty years, came to my office two days after being struck on the chin by another man with his fist, breaking the lower jaw between the right cuspid and first bicuspid, splitting the process back of the anterior teeth, so that in closing the mouth the lower teeth were thrown outside the upper, until the space between the teeth at the fracture was nearly an inch. The soft tissues were badly lacerated. I removed all fragments of bone, washed the wound with H_2O_2 , brought the parts in almost complete apposition, and, failing to hold them with ligatures, I made a hard rubber splint fitted to the inside of the teeth, and left the ligature first applied to assist in holding. Then, by pressure and the assistance of strong ligatures, I fastened the teeth firmly to the splint by drilling holes through the splint to pass my ligatures through from the inside, tying them on the outside. The operation was difficult on account of swelling, but successful. He is quite comfortable, and has good use of the mouth in taking food and drink, and is making rapid recovery.

J. W. Smith, D.D.S., Champaign, Ill

Pheno-camphor or campho-pheneque is made by dissolving three parts of camphor in one part of carbolic acid.

SIGHT RESTORED BY PULLING A TOOTH.—A case which attracts attention in medical circles is reported from Lamar, Ark. Mrs. Eliza Ryan, a widow, eighty years old, who has been totally blind for thirty years, had a tooth pulled from the upper jaw.

The root of the tooth was nearly an inch in length. When it was extracted Mrs. Ryan complained of intense pain in her eyes, and then cried out that she could see plainly, her sight having been restored.

RUBBER CEMENT.—Good rubber cement for sheet rubber, or for attaching rubber material of any description or shape to metal may be made by softening and dissolving shellac in ten times its weight of liquid ammonia. A transparent mass is thus obtained, which, after keeping three or four weeks, becomes liquid, and may be used without requiring heat. When applied it will be found to soften the rubber, but when the ammonia is evaporated it forms a kind of hard coat, and causes it to become both impervious to gases as well as liquids.

—*Rub. World.*

Dr. J. G. Cameron, of Cincinnati, recently lost a finger from blood-poisoning, caused by the scratch of an instrument; necrosis ensuing, necessitated amputation. It is remarkable that there are so few cases of the kind. Dr. E. E. Hughes, of Des Moines, Iowa, nearly lost his sight by a piece of tartar striking the eye while he was scaling a patient's teeth. If you have a scratch or cut on a finger that you must put into a patient's mouth, better cover it with a thin rubber finger-tip, or cot, than run any risk.

—*Ohio Journal.*

Copper amalgam still continues to divide the profession. Opinions are many—facts few. Dr. Ames argues that we heat and triturate it too much. Dr. Barnes contends that we do not heat and grind it enough. The ITEMS OF INTEREST says: "The *Ohio Journal* asks, 'Why does copper amalgam squeak?' We know!—in its squeaking voice it is crying, 'Take me out! take me out! I am a failure! I ought to turn black, but I can't in this mouth. Take me out!' Brethren, take heed to the voice of the copper amalgam."

—*Ohio Journal.*

In inserting contour fillings in central incisors, anchor near the cutting edge a groove over the end, or grinding surfaces, of the tooth. The thin plates of enamel will not weaken the walls percep-

tibly if the groove is carefully drilled and the margins beveled and protected with gold. But where the enamel plates are extremely thin, and we cannot get a sufficient bulk of gold, I cut away the lingual wall enough to give strength to the filling at this point. The labial wall is left for the sake of appearance.

—Dr. C. N. Johnson, in *Review*.

What a field for enlightenment there is with the dentist in showing the relation that exists between the profession and the patient. The time is now ripe for a consultation fee, for many an hour is wasted by persons coming into a dental office and calling the dentist from his chair, for examination and consultation regarding what is best to be done. Perhaps it is a case of regulating; and when the advice is given, and the patient gone, a half-hour has been given away. This is simply because it is not customary for dentists to charge for such advice. Our brother physicians would receive a fee for such service, and it would be expected that he would.

Dr. J. A. Osmun.

Of the late Dr. Gray, homeopathist, of New York, it is said that a poor sewing-girl went to him for advice, and was given a vial of medicine, and was told to go home and go to bed. "I can't do that, doctor," the girl replied, "for I am dependent on what I earn for my living." "If that is so," said Dr. Gray, "I'll change the medicine a little. Give me back the vial." He then wrapped around it a ten dollar bill, and returning it to her, reiterated his order. "Go home, and go to bed," adding, "take the medicine, cover and all." Sound homeopathy that, certainly.

—*Homeopathic News*.

A UNIQUE CASE.—We extract the following from the last issue of the *British Medical Journal*: "A nice point of law has lately been debated before a French court. The question was whether an operation on a dead body by an unqualified person came within the meaning of the enactment forbidding the illegal practice of medicine. It appears that a pregnant woman had just died, the cause of death not being stated. The Curé of the village, who had been with her in her last moments, induced a neighbor, who was in the room, to perform Cesarean section on the corpse, with a view of saving the child. The operation was successful; but the operator was brought before the magistrate and fined fifteen francs for having been guilty of illegal practice of medicine."

The profession does not go far enough in examining the wisdom tooth in its relation to the vertical portion of the ramus. They will find, by running the finger well back of the wisdom tooth when the gum is over the top of it, that there may be a space of one-sixteenth or one-quarter of an inch between the posterior end of the wisdom tooth and the vertical portion of the jaw, and frequently I have had cases where the dentist has been cutting away the gum for six months to a year in trying to force it back, when there was but one-sixteenth of an inch between the posterior part of the wisdom tooth and the vertical portion of the jaw. There was no room for tissue except over the top of the tooth. A great many mistakes are caused by an improper anatomical examination of the parts. I think that is a point well worthy of your consideration.

—Dr. J. W. Stonaker, in Review.

OIL OF CASSIA IN PYORRHEA.

In Illinois Society.

Dr. Newkirk : I have had excellent results in my practice from the use of oil of cassia in cases of pyorrhea. I use it in this way. For instance, we have a pocket containing pus, well up and down the root of a cuspid, such a case as I treated not long since ; after removing the tartar or incrustation, as we always do, and thoroughly cleansing the part as thoroughly as possible with the peroxide of hydrogen, removing all of the products of the disease, I then inserted a broach wrapped with cotton, which would pass to the end of each pocket and force up the oil of cassia to every point. I have found that a few trials of this sort in some of the most obstinate cases have yielded very satisfactory results, and I have had perfect cures. I use it from the bottle. There is usually more or less fluid remaining from the use of the peroxide of hydrogen, and perhaps a little bleeding, so that there is a sufficient dilution to avoid any harm from its use.

Dr. Black : My rule is not to continue the oil of cassia very long, but use an essential oil that is not so irritating. I use, for instance, the oil of eucalyptus. While it is antiseptic, it is not so irritating.

Dr. Harlan : Cajupot will do just as well.

Dr. Black : There are several oils which are less irritating than the oil of cassia. The oil of cassia is Chinese oil ; it is sold in shops as the oil of cinnamon. The Ceylon oil is worth about \$2.00 per ounce.

—Review.

Monthly Gossip.

BY WM. E. BLAKENEY, D.D.S.

MANY PEOPLE MISTAKE stubbornness for bravery, meanness for economy, and vileness for wit.

"WE ARE FAR MORE LIKELY," says Diderot, "to catch the vices than the virtues of our associates.

A MEDICAL COLLEGE in Detroit has organized a dental department, and will begin its first course this fall.

"PROFESSIONAL FEES" is the subject of a well-written paper by Dr. George H. Mills, of New York, and published in the *Ohio Journal of Dental Science*.

IT IS SAID that a mixture of white lead and turpentine will cure felons. Bathe the part affected frequently, and hold it near a warm surface to dry.

DR. DANIELS believes that the criticism of papers read at society meetings would be more intelligent and profitable if those who discuss gave themselves time for preparation.

THERE ARE ABOUT 2,000 foreign students at German universities; 331 of them are from Russia, 293 from Austria, 225 are Swiss, and 436, the remainder, Americans.

DR. BONNELL'S plan of preventing the decomposition of zinc fillings is to thoroughly saturate them with heated paraffine.

AN ENGLISH PHYSICIAN, Dr. Lennox Wainwright, affirms that a mixture of menthol and carbonate of ammonia, as smelling salts, is excellent for hay fever.

ONE MILLION TUBES for Koch's lymph is the work which is at present engaging the attention of a German glass works. The tubes are made of a fine quality of glass, and are closed with a glass stopper.

NEW DENTAL COLLEGES are multiplying, and it would be encouraging to the profession if, with this numerical increase of educational facilities, a corresponding increase in the usefulness of these institutions was made apparent.

THE SMALLEST SCREWS in the world are used in the manufacture of watches. The screw in the fourth jewel wheel, that looks to the naked eye like a bit of dust, is so small that a lady's thimble would hold 1,000,000.

HIPPOCRATES believed that medicine consisted in addition and subtraction—"the addition of those things which are deficient, and

the subtraction of those things which are redundant." As often practiced nowadays, it might be defined addition to human ailments and subtraction from the pockets of patients, a moneyed consideration for the ailments.

CHLORALAMID is said to be a reliable hypnotic to quiet the nervous system and induce sleep after surgical operations. It has no anodyne properties, and gives prompt, reliable results with absolute freedom from evil after-effects. It is prepared by combining two parts of chloral-hydrate with one of formamide.

TINCTURE OF IODINE mixed with glycerin is claimed by Dr. Hammond to prove more effective as a local application than the plain tincture. This is due to the retardation of the dissipation of the iodine, or, more likely, to the skin remaining soft, and, therefore, in a better condition for absorbing the drug.

"IT IS WISER, by far," says the editor of the *Dental Advertiser*, "to do a small and profitable business, looking for patients among those who can appreciate good work and are willing to pay fairly for it, than to fall into the bad way of exchanging an old dollar for a new one, simply to keep yourself employed."

DR. SAMUEL A. MILTON, of Clinton, Mo., in the *Dental Cosmos*, claims "gratifying success in obtunding the sensitiveness of dentine by placing a little oil of cloves in the valve of the hot-air syringe, and vaporizing the oil with heat, and blowing the medicated vapor into the sensitive cavity." If the vapor is oily, as is likely, he removes this with absolute alcohol.

DR. E. A. STEBBINS has, for several years past, been experimenting with nitrate of silver as a therapeutic agent, and reports gratifying results. The doctor, in an exhaustive paper, published in the *International*, demonstrates his new method of treating caries, and produces convincing proof of the thoroughness of his researches in this line of inquiry. Argenti nitras is destined to play an important part as a therapeutic agent.

FRANK SNYDER, of Buffalo, a poor laboring man, fell from a street car in that city, last month, and sustained a fracture of the right leg. Dr. L. Bradly Door placed the injured leg in splints, charging him ten dollars for the operation. Snyder not being able to pay the sum, the doctor removed the splints and left the man in his agony. Snyder will be a cripple for life because of the removing of the splints. The inhumanity of this M. D. should be heralded all over the country. Brutality of this kind, however, requires something more than a public rebuke, and he will probably receive it at the hands of the law.

"IT HAS APPEARED TO ME," says Dr. Meriam, "that societies could be engaged in no better work, through committees and otherwise, than endeavoring to fix on the constituents of alloys which would be best calculated to serve our purpose, which would be best worthy of our experimental uses, and cements which may offer opportunities for improvement, if a study of them were entered on in conjunction with chemists, and with manufacturers, some of whom undoubtedly would be willing to co-operate with societies in such labors." The necessity of some such action as this is so apparent that we wonder why it has not taken practical shape.

AT THE THIRTY-FIRST annual meeting of the American Dental Association, the Committee on Dental Legislation made a report and urged, "as a solution of the differences between college faculties and State examining boards, that a committee should be appointed from each State board where a college was located, to assist at the examination of candidates for graduation, in connection with the college faculty, and such examination and indorsement was to be accepted as final in any State." It would be difficult, we think, to suggest a wiser proceeding. Until some action is taken of this nature, we must expect conflicting scenes between State examining boards and college faculties.

COMBATING THE GERM THEORY of putrefaction to the phenomena of disease of living tissue, Lawson Tait says: "Granting that the germs which would inevitably produce putrefaction in a dead infusion of beef are constantly admitted to wounds, there is not the slightest evidence that they do produce any change on living tissue, still less that the changes occur in the numerous varieties of what we call blood-poisoning. Even when they are of an undoubtedly local origin they have not the slightest analogy to those seen in a putrefying dead infusion." * * * "If the view of the germ theorists are correct, we ought to expect that no operation can be done successfully without rigid antiseptic precautions. The slightest cut of the skin ought to be followed by septic poisoning. There ought to be no difference in the mortality of operations in small and large hospitals, in town and in the country. In fact, if germs could have had the unbounded influence which is claimed for them by many antisepticists, surgery would long ago have been an extinct art, if, indeed it would ever have struggled into existence." How true it is that we can carry everything to extremes, and make them disgusting. Let us bear in mind that the "germ theory" should include the germs of health as well as disease, that health and life itself could not exist without them. The air is full of them as it is of birds, and much more so.

Our Question Box.

WITH REPLIES FROM OUR BEST AUTHORITIES ON DENTISTRY.

Address all questions for this department to DR. E. N. FRANCIS, Uvalde, Texas.

Question 23. *I am desirous of obtaining the method followed by different operators in regard to retaining points, undercuts, etc. In large cavities where anchor screws are used I have no trouble; but in small cavities, where they are not used, I am troubled with rocking fillings.*

How do you prepare a proximal cavity for gold filling, and in malleting second half, how do you prevent first half from rocking? I am a graduate, but cannot put my teaching in practice.

I seldom use screws; I prepare all proximal cavities with a groove of variable depth, and a shallow retaining pit at cervical extremity; starting filling at last-named place with hand pressure, finishing with hand or electric mallet. By this method I am able to put in a durable filling, and am not troubled with rocking, shivered enamel or recurrent decay.

C. L. Boyd, Enfaula, Ala.

I never use anchor screws. In large contour gold fillings I cut groove at the cervical wall, from palatine to labial surface, slightly undercutting both posterior and anterior side of cavity, making retaining point at cutting edge of tooth. If the tooth is frail, bevel the enamel slightly, and mallet to the margin. I use No. 35 or No. 36 inverted cone burs in making first half of groove at cervical portion, finishing with No. 33½ or No. 34. First fill the groove at cervical wall, then retaining pit at cutting edge, binding across each side of cavity from groove to retaining point, condensing the margin well. In small cavities I use two retaining points only—one at cervical and one at cutting edge. Fill point at neck first, then at cutting edge; bridge over and condense margins well; the center will take care of itself. I prevent rocking by drilling retaining points deep enough to retain solidly each piece of foil until reduced.

I. B. Archer, North San Juan, Cal.

If a proximal cavity in front teeth, I usually drill a retaining pit at the cervical wall, and undercut at cutting edge. Frequently, and especially if lingual wall is decayed or broken away, I drill two retaining pits at cervical wall in labial and lingual surfaces, and then cut a groove from one to the other. This virtually makes an undercut with dovetail, as the drilling is usually, from necessity, done at an angle, and not in line with axis of tooth. A slight amount of sandarac varnish or Canada balsam applied to point where you wish to start filling, and nearly dried with hot air, or allowed to evaporate, will be of much assistance in retaining the first two or three pellets in position. I laughed at the idea when I first heard it; but I don't now. The rocking of gold fillings is the bane of most young operators, and the point to remember is: Get perfect anchorage for the first few pieces of gold, and for added security it is well to hold filling in position with an instrument until the undercut, at cervical wall, is thoroughly filled.

C. H. Haines, Dexter, Me.

In ordinary proximal cavities I make the first retaining form at the cervical lingual part of cavity, always cutting to the outside of tooth, then a slight undercut at the labial cervical border; now make it straight sided to cutting edge of tooth, with slight undercut. I start fillings with soft gold-foil pellets, and by hand pressure. Place first pellet in first retaining form, and pack tight; the second pellet at the labial cervical corner, and pack the third between the two. The size of the three pellets should bridge across the cervical wall. A little practice will give you the size, as it does the stone mason in building a wall, to select the stone that will just fill the space. If the three pellets do not fill the cavity nearly half full, repeat the process with soft gold pellets annealed, say Williams' corrugated. Now pack a pellet into the form at cutting edge, and have it bridge across the lingual surface, if possible; now take rolled strips of cohesive foil, and finish lingual border, having the ends of pellets come below the border of cavity all round. Pack rolls of cohesive strips into the remaining space, and cover the whole surface of filling for the finish. What I mean by rolls of cohesive strips is, to cut a sheet of gold into four strips, and roll them loosely on napkin or spunk, and cut in such lengths as you wish. This process of filling will give you a base of semi-cohesive foil packed round the border of cavity like the fingers of the open hand.

I do not make as showy fillings as many good operators, believing "the highest art is to conceal art," and that nothing is so beautiful in the human mouth as a fine set of natural teeth. The advantage of using pellets in packing the wall is, that it relieves largely the pressure from the pulp, which, in case of thin dentine, might cause subsequent trouble under manipulation. The pressure, as above, acts in the same manner as a cork that stops a bottle. The first half of gold should be packed by hand pressure, and finished with mallet. I prefer a steel mallet, as the weight of mallet will unite the crystals of gold better than a stronger blow with a wooden one, causing more jar to the tooth. These principles should be carried out in all cases, if possible.

J. A. Robinson, Jackson, Mich.

Question 24. *With central incisor extracted, remaining teeth in good condition, and objections to wearing plate, would you consider it good practice to permanently attach a tooth to the lateral and remaining central, with narrow bands fastened with oxyphosphate?*

Certainly; or by gold fillings and bar.

I. B. Archer.

I do not think the plan you propose would be a success.

J. A. Robinson.

No. I think it better to insist on a light gold plate, or back up an ordinary rubber tooth, with backing, extending over the palatal portion of proximating teeth, with pins in same, to be fitted to, and cemented in, cavities prepared in aforesaid proximating teeth.

C. L. Boyd.

I know of a case exactly like the one described, where a bridge has been worn about eight months. The patient is perfectly satisfied with it so far. The teeth are separated, so it is self-cleansing. If, after a few years, the enamel under the oxyphosphate should be found in good condition, then this kind of work must be considered far better than a plate.

C. H. Haines.

Question 25. (1). *To how young a child is it safe to administer gas?*

(2). *Have you ever used Steinau's local anesthetic, and if so, with what success?*

(1). I have never used gas with children under twelve years of age.

(2). No.

C. L. Boyd.

(1). I never administer gas to a child under ten years of age.

(2). No.

I. B. Archer.

(1). I think it would be as safe to administer gas to a young child as to an older patient, but the sight of inhaler so frightens them, and the face is usually so small, I have not found it a practical anesthetic for children.

(2). I have seen Steinau's local anesthetic used, and have also *felt* it used, so I can speak from experience. The first insertion of needle, on both lingual and buccal surfaces, was painful; in fact, I think as much so as if tooth had been extracted without an anesthetic. The first injection numbed the gum, so the remaining ones were practically painless. The application of the forceps was attended with but little pain, but the wrenching was as painful as though nothing had been used. I think extraction under any local anesthetic, used with a hypodermic syringe, hurts the patient as much, but in a roundabout way, and by degrees, so they think the actual pain diminished.

C. H. Haines.

Miscellaneous Questions and Answers.

Question 01. *What will be the result on development of permanent teeth from having the central, lateral and cuspid of a child eighteen months knocked out by a fall?*

A. A. H.

If the maxilla has not been injured, you will find answers on page 109, ITEMS, for February, 1891.

Question 02. *What is the success and demerits of the various preparations, external and hypodermic, for painless extraction? Is the method gaining in favor, and how about electricity?*

Subscriber.

The danger attending the use of those most successful, and the uncertainty of others, interdicts their general use; they are, however, gaining in use, if not in favor. Electricity has been somewhat revived; but, without some great improvements in its application, will never be a decided success.

READER OF THE ITEMS:—The "best way to fill large and deep cavities in molars and bicuspid with amalgam, to prevent them becoming sensitive to thermal changes," is to line the cavity with some other material. If the nerve is not exposed, or nearly so, use some good oxyphosphate for a lining, and pack amalgam while cement is plastic, leaving no cement in contact with the periphery of cavity. If nerve is exposed, cap, or treat as per direction with Welch's oxyphosphate, or follow directions in back numbers of ITEMS.

"The treatment for swollen face after extraction of abscessed tooth, with swelling continuing for a week without change for the better," will depend on a proper diagnosis, as there are many causes that produce "swelling" as above described. As the tooth is a second molar, and with no better description to guide us, we will take it for granted the trouble is caused by a collection of pus that was not liberated at time of extraction. This should be removed as your judgment indicates, and then treated with antiseptics, if necessary. Do not use poultices; if they are indicated, use rubber covering or hot applications. Prevent its opening externally by deep incisions with lance, or paint face with collodion.

Question 03. *For a man of fifty years I extracted abscessed inferior right cuspid root, and patient not wishing to wear plate, I treated root and reset it. One month from operation the root was sound and fast, so I put on a gold crown. It has been very loose, and seems to be working out. If I extract again and insert cement and reset root, so the cement will lodge intervening root and process, do you think the result would be satisfactory?*

No; age is against you.

Question 04. *What is the correct formula for the one, two, and three mixture, and for what is it used?* Doctor B.

One, two, and three mixtures are numerous, but think that referred to is Black's, as per page 17, ITEMS, January 1, 1890. A book has been published on the above, with full treatise, which space forbids here.

COUNTRY DENTIST:—Your questions are too long for publication, and cover ground embraced by the various dental journals for years, and our answers would necessarily be a "rehash." We will touch on your questions, however, in the style they were given, and you may draw conclusions. "New appliances, medicines, and materials" are brought before us in our dental journals, and, after reading many articles devoted to, and enlarging on, their merits, we often wonder how dentistry ever existed without them. They appear like a comet on our dental horizon, and often disappear in like manner. Time has a way of drawing the curtain of unsucccess over many "new things," and experience proves of little worth many of our great expectations.

Your last question: Hypnotism is comparatively new to many of us, though a revival of an old thing, which, by that eternal cycle of repetition, becomes new. A little experience favors a belief. No local dentist can experiment with hypnotism without being considered "a dangerous man" by some in the community where he is located. The traveling dentist, and some in our largest cities, can afford to experiment; but the man who has an honorable calling to protect, in a small neighborhood, cannot afford to have his name go out as a hypnotist. The dentist's influence should cease when the patient leaves the chair—except that for good or moral—but that is not the case with hypnotism; not that the influence is naturally bad, but an existing influence that no human being should have over another.

E. N. F.

For Our Patients.

TO DR. WM. H. ATKINSON, ON HIS SEVENTY-SIXTH BIRTHDAY.

Deeds, not years, mark time !
Your cup is not yet full,
Nor have you reached your prime ;
Your eyes are not yet dull.

We can but wish that time, will
Gently brush thy locks ;
Thy tongue will ne'er be still,
We yet shall hear thy talks.

You've long a mantle worn—
Unique in cloth and style—
When you are from us torn,
Will no one else beguile ?

Pray, father, ere life's o'er,
Thy garments brush so clean ;
The crumbs that fall to floor,
Some starving mortal glean.

Stay yet awhile, the strife
Wild wages o'er our heads ;
Too short has been thy life,
Ignorance still 'round us treads.

We will not selfish be ;
Thy burthens heavy to be borne,
No one but has adversity,
"The darkest always 'fore the morn."

Thy years three score and ten,
With six long ones beside ;
You're scarcely out your teen,
And yet on life's high tide.

Then stay, our father, sire,
Rest ere the night comes on !
Until we rise the higher.
To you a New Year's born.

January 23, 1891, at 1.06 A. M.

W. G. A. Bonwill.

"You make your living, sir," said a dentist to an insurance agent, "by insuring the lives of persons least in danger of dying."

"And you," the agent replied, "find employment for your own teeth by pulling out the teeth of other people."

THINGS A WOMAN CAN DO.

Of the modern daughter of Eve a Boston paper says :

She can come to a conclusion without the slightest trouble of reasoning on it, and no sane man can do that.

Six of them can talk at once and get along first rate, and no two men can do that.

She can safely stick fifty pins in her dress while he is getting one under his thumb-nail.

She is as cool as a cucumber in a half dozen tight dresses and skirts, while a man will sweat and fume and growl in one loose shirt.

She can talk as sweet as peaches and cream to the woman she hates, while two men would be pounding each other's head before they had exchanged ten words.

She can throw a stone with a curve that would be a fortune to a base-ball pitcher.

She can say "no" in such a low voice that it means "yes."

She can appreciate a kiss from her husband seventy-five years after the marriage ceremony was performed.

She can walk half a night with a colicky baby in her arms without once expressing the desire of murdering the infant.

She can do more in a minute than a man can do in an hour, and do it better.

She can drive a man crazy in twenty-four hours and then bring him to paradise in two seconds by simply tickling him under the chin, and there does not live that mortal son of Adam's misery who can do it.

"Doctor, are you sure you can put my teeth into a satisfactory condition?"

"Yes, sir; at least I will spare no pains in doing so."

"Oh, I don't ask you to spare any pains in doing it; keep them all to yourself, and I shall be the more delighted. It is the work I want, not the pains."

INSTRUCTING A CHICAGO DENTIST.—"Boss, it am this way: My Car'line here, she's got toothache in one of her teeth. Now, she ain't ve'y strong woman, and las' time she took gas it was li'le too much for 'er. Now, I don' think you bettah give her gas this time, but gasoline, and not much of that." Toothache is not considered a laughing matter, but the dentist laughed about it that time.

WANTED THE "KOORT AJOORNED."

An Irishman, having put his brain in pickle for the occasion, called upon a dentist to have a tooth extracted.

"Docther," said he, "won't yaes be afther takin' a wee little insthremint an put it on this ere tooth"—pointing to a lower molar—"gintly, as much as to say, ' Oi'll be afther troublin' yaes honor to vacate the ranche for a bit, so that Patrick O'Rooke'—that's meeself, yaes riverince—' can howld a private conversashun wid yaes ; ' thin, docther, jist guv it a squaze, you know, and, be jabers, it'll think it's the tip av yaes fanger that's fool'n around ; thin squaze a little harder, till it's meeself as will give yaes the sign to sthop."

"I'll observe the programme faithfully," said the dentist, while going for his forceps.

"Now jist tooch it gantly, docther," continued the Irishman, with a sly wink, "as if yaes wuz sayin' to it: ' Good mornin' to yaes, darlint' ; and whin I howld up me hand like this"—illustrating the proposed safety-signal—"thin sthop for a breath, docther, to give it time to say its prayers."

"I'll follow instructions literally," observed the dentist, laughingly.

"That's a broth av a boy," said the Irishman, with another suggestive wink ; "and now, docther, whin yaes see me hand pintin' like that, jist ' ajoorn the koort,' as the lawyers say."

The dentist promised to do so, and proceeded to business, when, with a yell that sounded like the war-whoop of an Indian, the Irishman's tooth "vacated the ranch."

"Be the howly Mowes !" exclaimed the Irishman, as soon as he had recovered his breath, "av iver I'd thot the murtherin' spalpeen was goin' to kick and tear like thot, I'd towld yaes to take a sledge-hammer and knocked the divil to splinters. It's no more fool'n 'round wid the loikes o' that Patrick O'Rooke is goin' to sthand when he's got to have another av the varmints oot—de yaes moind that !"

"What ! back again and not had your tooth out?"

"A little misunderstanding between me and the dentist. He told me to open my mouth. I did so. But a moment later he said, 'That'll do. I propose to stand outside.'"

"Yes. And what then?"

"Then came the misunderstanding I spoke of. He lost the tooth instead of me."

"He is rich," said her mother; "it is therefore absurd for you, Mabel, my dear, to say you cannot love him."

"But, mamma, his teeth are false, and so is his hair, and Lord knows what else."

"So are your father's teeth; and his hair would be if he had any; but you love your father, don't you?"

This settled it. The more artificial the better, especially his money, for certainly that was not a natural production, it was acquired.

"Husband, little Dick is up stairs crying with the toothache."

"Take him around to the dentist."

"I havn't any money."

"You won't need any; the toothache will stop before you get there."

Mr. Skinnphlint had been walking the floor with his hand on his jaw for about four hours.

"Why don't you have it pulled?" inquired his wife.

"Have it pulled!" he roared. "Martha Ann, that tooth cost me a \$2 bill less than a year ago for filling. Reckon I'm going to throw that money away and half a dollar more on top of it? Not much! Ache away, gosh ding ye! Ache away!"

And Mr. Skinnphlint resumed his walk.

—*Chicago Tribune.*

A colored brother, although suffering with an aching tooth, attended the usual Friday evening meeting. Being called upon to lead in prayer, he proceeded as follows: "Oh, Lor,' bress dose"—when, in agony of pain, he exclaimed: "Brudder Tompsing, jiss you finish dat ere prayer while I wrastle wid de debbil in my mouff."

"There goes a living tooth-pick," said Mike Dwyer to a sporting friend, as the two were standing in front of the Hoffman House, the other night, and a big, ponderous-looking man walked slowly by, puffing at a cigar almost a foot long.

"He don't look like it," said the friend.

"No; he's a dentist."

Brown—I'd have this infernal tooth out if I were sure it wouldn't hurt too much.

Mrs. Brown—Make up your mind, my dear, that you will feel just about as much pain as you do when you give me a little money to go shopping.

Current Notes.

The dentist may not be a man of ancestry, but he is one of prominent extraction.

An electric fan, revolving slowly in a horizontal plane in addition to the rapid revolutions in the usual upright position, is a novelty of much value in the dental office.

Harry Curtiss, eighteen years of age, was found dead in bed, in Findlay, Ohio, recently. An autopsy showed the heart to be paralyzed, caused by the excessive use of cigarettes.

The District of Columbia is without a dental law, and dentists of the country are urged to request their Senators and Representatives (who enact the laws for the District) to secure the passage of an act to regulate dental practice in the District.

At Hephzibah, Ga., Samantha Brown, colored, called on Lee Whitehead, also colored, and a would-be dentist, to have a tooth extracted. He opened the woman's jaws so wide she could not close them, and it was with difficulty a surgeon got them in proper position.

A queer suit in equity has been brought against a Philadelphia dentist. He has on his premises an electric plant, for his dental work. The engine, dynamo and machinery make too much noise for the neighbors, and they have petitioned the court to have the nuisance abated.

On behalf of the Committee on Dental Legislation, in the last session of the American Dental Association, Dr. Noble reported substantially the infeasibility of a national law governing dental colleges or examinations, and recommended instead that the various State laws be made more uniform, and that dental colleges, societies, and boards of examiners act in unison in enforcing the laws as they are.

The ninth annual meeting of the Maryland State Dental Association will be held in Baltimore, at the St. James Hotel, commencing Monday, December 14th, at 8 P. M., and continuing through the 15th and 16th. Valuable papers will be read, and exhibits made. A cordial invitation is extended to members of the profession, and especially to those residing in this State.

Dr. W. C. Barrett, or perhaps we ought to say, Prof. Barrett, is now the editor of *The Dental Advertiser*. His experience and ability will bring weight and popularity to that already interesting journal.

Dr. W. P. Horton, Cleveland, O., says he has heard of a partial set of teeth, that had been swallowed, passing harmlessly through the alimentary canal by eating nothing but mashed potatoes for three or four days.

Dr. C. M. Richmond made an extensive piece of bridge work for Dr. Dwinelle at the meeting of the last Odontological Society, of New York. The upper piece extended from the twelfth year molar to the cuspid root, and then spanned to the next twelfth year molar. A favorable feature of the work was its easy removal. By the way the doctor ate his supper with it there was no doubt of its thorough usefulness.

Dr. J. W. Clowes, of Fifth avenue, New York, is a master-hand at amalgam work. Sometime since we saw him unite the space between two broken-down teeth with it. He built up the teeth and united them in a beautiful manner, and claimed both were made stronger by the union. We believe they were, and he assures us his experience for several years proves it. We understand he even bridges spaces, where a tooth has been lost, in this way.

While cross-examining Dr. Warren, a New York counsel declared that doctors ought to be able to give an opinion of a disease without making mistakes.

"They make fewer mistakes than the lawyers," responded the physician.

"That is not true," said the counselor; but doctors' mistakes are buried six feet under ground, a lawyer's are not."

"No," replied Warren; "but they are sometimes hung as many feet above ground."

Dr. W. C. C. Ball, of Norwich, Conn., makes wax-plates or sheets thus: Have about a dozen pieces of window-glass 4x6, a pan of soap water, with the bubbles skimmed off, and a four-quart tin pail, half full of water. Melt wax in the water, and after dipping a piece of the glass in the soap water, dip it two or three times in the hot wax. Each time after drawing it out of the wax let it cool. Cut the wax off the edges and on each side of the glass you will have a nice sheet of wax of any thickness you may desire.

There are several successful storage battery manufactories in Europe. Their manufacture or introductory in this country has been sadly delayed by a fight among inventors. This is now settled, so that we may expect soon to find them in common use.

In making a model from an impression, first brush the surface of the impression with a thin coat of soap-suds, free from bubbles. Pour thin plaster carefully from one heal to the other, so as to fill well impressions of teeth, without confining air on the cusps. The surface of the impression should be quite moist with water.

In taking an impression where there are teeth, it is well first to slightly oil the teeth. This will allow the plaster to come off clean and smooth.

Two traveling dentists were at the Parker House last week, claiming to extract teeth by a new method and without the least pain; but their business was suddenly cut short when they administered their drug to a lady employed in the house as table waiter. It threw her into violent convulsions, so that it was necessary to call in a physician, to whom they admitted they did not know the nature of the drug they were using. They left on the first train out of town without waiting for the result of their mischief.

The chairman of a committee appointed last year on the "Appointment of Dental Surgeons in the Army and Navy," read a report, according to which the Surgeon-General of the United States Army does not deem it necessary to have dentists appointed. Whenever troops are massed in garrison, it is generally near a large city, where the services of skilful dentists may be secured, while those troops not so situated are generally only a few hours distant from places where dentists are located. This is due to the increase in railroad facilities. The committee did not deem it advisable to recommend further action in this matter.

For mixing oxyphosphate, have a thick glass or porcelain slab, and warm it to about the temperature of the mouth—in the winter a little more so; then mix only a little of the powder with the liquid, gradually adding the powder till you have a creamy consistency. Mix as rapidly as you can mix thoroughly, and carry as quickly as possible to the prepared and dried and protected cavity. Bring it immediately to the final form, and let it harden without interference. We have said all this before; but, by the letters we receive, we judge many have not read it.

Dr. W. H. Steele, of Forest City, Iowa, is an interesting and instructive writer, as is shown by his articles for the *ITEMS* from time to time. For some time he has been writing a book to contain the thousand and one dental hints and items to help the busy dentist. From the little insight we have of it we can promise our readers a treat in this book.

Some one complains that in preparing one of the Rynear's crowns he burnt a hole through the gold in trying to spread the solder. Those who are familiar with the use of gold solder on gold will know this is possible with any solder and gold. For instance, when solder flows within the Rynear crown, at a point where it is not desired, and a further effort is made to displace it by reheating, so that it will flow to the place originally intended, the effort will be futile; for the solder having once flowed becomes a part of the crown itself, and, to flow again, it must of necessity result in the melting of the portion of the crown to which it has been attached.

The burnisher is one of the most important instruments in gold-filling. However well the filling has been inserted, the thorough burnishing of the surface is of prime importance. "But it makes the surface uneven." Yes, in proportion to the faulty packing. "But severe burnishing, especially with a globe-point, makes necessary much filing, and thus the destruction of contour." Better have no contour than leave pits and parts of softly-packed gold. Do even, thorough, solid work throughout, and you will not have much filing away as the result of very severe burnishing; and there is nothing like this for procuring a long-lived filling.

The United States Fonetic Company is doing much to bring our spelling to a fonetic basis. Their gatherings in the interest of this reform are very numerous and attended. At their last, held July 15th, 16th, and 17th, in Toronto, Canada, there were 1,500 teachers; 1,200 of these were from the United States. For three successive sessions of the United States Congress they have sent in mammoth petitions praying for action by that body. At the last session a committee was appointed by the lower House to consider the subject. The committee formulated a very favorable report, but for want of time it was not presented; but the committee was continued. Now let all those in favor of simplifying our spelling join this Association in their laudable effort. Write to the Secretary, C. A. Story, 2832 Vernon Avenue, Chicago, Ill.

Editorial.

Most successful men attribute their success, not to fortuitous circumstances, but to patient, intelligent, persevering labor. Few commence their struggles with the help of friends, large resources, or any evidence of genius. Many were poor, ignorant, awkward, blundering boys, isolated, hampered and ill-treated. Those of us who are old can clearly trace many such from this condition to their position as leaders in society, politics, finances and commerce. Few had help of any kind; it was a struggle all the way. It was "earning their bread by the sweat of their brow," getting their lessons under the severest difficulties, and failing, failing, failing, where they sought success. They were discouraged by friends, laughed at by associates, kicked about by superiors, and buried by inferiors. But we do not beat weeds and useless seed. Wheat is beaten to separate it from the chaff, and it is handled very roughly before it becomes food for the hungry.

MAKE YOUR DENTAL OFFICE CHEERFUL AND INVITING.

My early chilling embarrassment in visiting physicians' offices made me resolve, if I ever had an office, it should have everything attractive, and repulsive things should be hidden; and it should look as little "professional" as possible. The first physician's office I ever went into frightened me so I ran for dear life, without delivering my message. Think of it! In the corner was the skeleton of a man, stark naked—nothing but bones on him, staring me right in the face. "What an awful place this must be" I thought; and when I turned my eyes to find the doctor—right over his head was a man's head, grinning, with his bony mouth wide open to bite me. And then came in sepulchral tones, "What do you want?" Do you wonder at my flying? My, what long stairs those were before we reached the street.

"Oh, ma," I said, as soon as I reached home, "don't send

me to that awful place again. That's where they kill folks. I saw two grinning right out of their bones? And the man there—his voice sounded awfully."

Later on I visited a dental office to have an aching tooth removed. The first thing I saw was a large colored picture on the wall. It was frightful. It was "the insides" of a whole man, teeth and all; oh, it was a terrible sight. And there were other things—instruments of torture and evidences of recent butchery—that made the blood chill and creep all over me. The first sight cured my toothache, and we tumbled out. They said I was a coward.

In our social relation with patients we must use great discretion. Each patient has an individual atmosphere; and, if we would be popular and successful, we must learn to adjust ourselves to it. A familiarity that would breed contempt in one will be congenial with another. A distance and reserve which would be respected as dignity in some, in others will be complained of as rigid coldness and austerity. Silence is golden with some; with others, discrete conversation, or even a few words, when conversation is impossible, will be agreeable. Some repel pity, or even sympathy; others value both. Some are controlled by an attitude of authority; others by persuasion. To allow freedom of action and speech are demoralizing to some; with others it is the only line of success. Pleasantry is out of place with many patients; with others it is the only way to keep their spirits up.

It is not our most extensive readers that know the most, or who can apply the most to life's necessities. Very many read in such haste, and so superficially, little is remembered and still less is digested. Like the food we eat, it is what is assimilated that does us good. Therefore, the attentive reader, though his time for reading may be limited, can instruct those who skim over a vast surface. Many who complain of poor memory, if they will pay better attention to what they read, see and hear, and make it the

subject of after reflection, will soon find their memory is not so much at fault as their attention.

The dentist, as well as the physician, lawyer and minister, is considered a professional man, and should therefore have dignity, learning, probity and standing quite above the masses around him. By the public these qualities are supposed to adhere to him as a matter of course, to belong to him of right, to be qualities that give him his professional character. If he lacks either, he so far disgraces his rank, belies his character, and is an imposter on society. Therefore, if men and women do not find in him dignity, they are disgusted; if learning is lacking, they suspect the man; the want of probity condemns him as an imposter, and he loses his standing.

We are too apt to look on ourselves as mere mechanics. The very insinuation from others is resented as an insult. Let us so conduct ourselves that our very character shall belie the charge.

But we are told by some would-be leaders that the public has no business with our character; that they come to us for work, not morals. Then surely we come to them as mere mechanics and must not complain if they expect to hire us as such. As a mechanic they will pay us for our skill only, for we have ourselves thrown off our professional cloak and rank ourselves with the ordinary workman.

The names Truman and Trueman are so nearly alike that, in making up October ITEMS, the printer, at the commencement of the second paragraph on page 583, left out what appeared like a repetition of names, and made Dr. Trueman say what really Dr. Truman said. This we regret the more, because it makes Dr. Trueman contradict himself. Dr. Truman believes acid is a cause of erosion; Dr. Trueman does not. Dr. Truman, therefore, prescribes chalk for its cure; Dr. Trueman believes it useless.